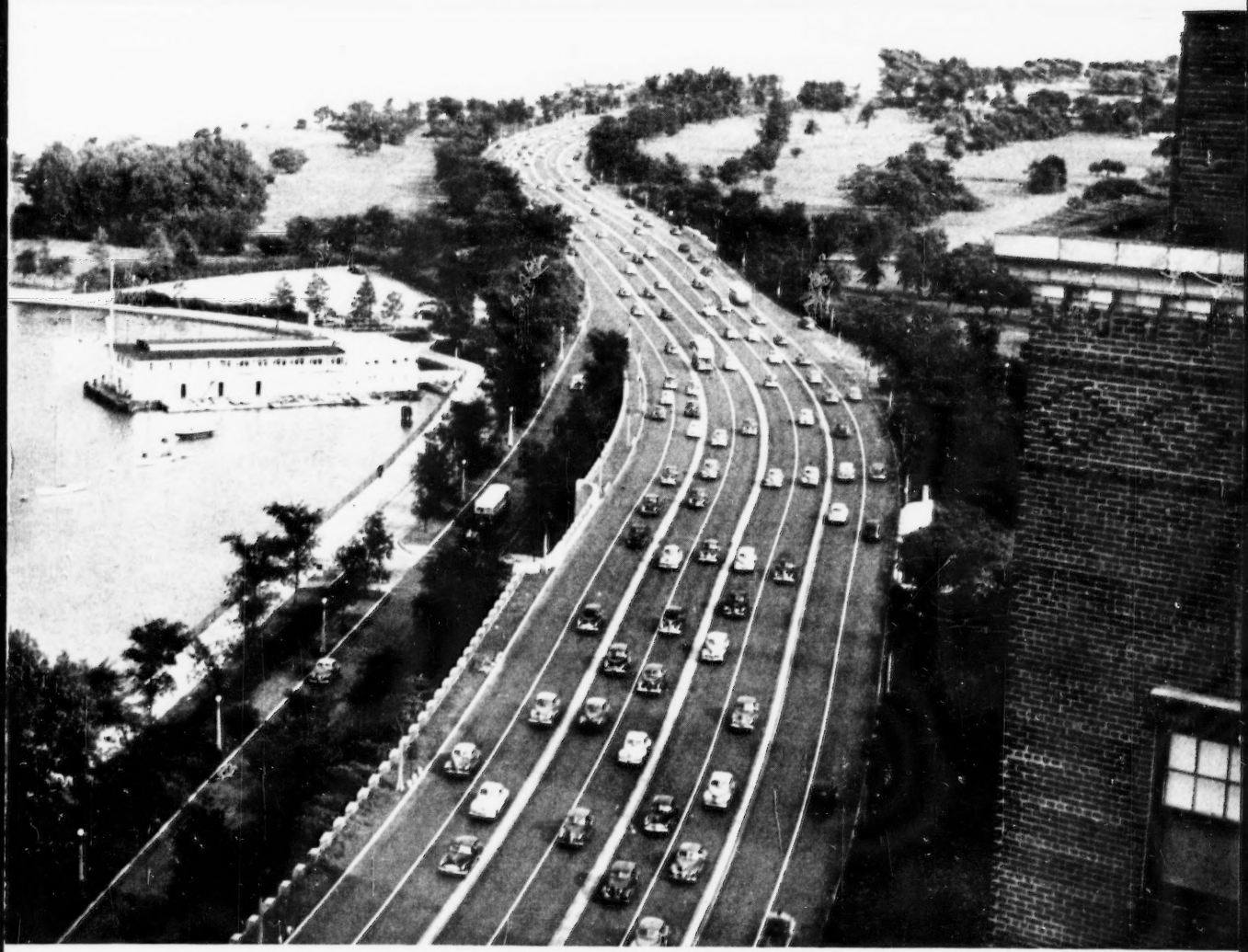
OCTOBER, 1953

Traffic Engineering



Chicago's Lake Shore Drive Showing Utility of Divisional Fins

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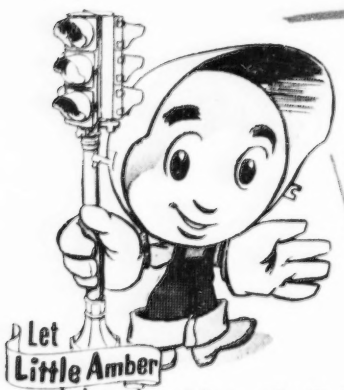

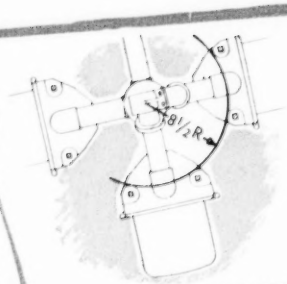

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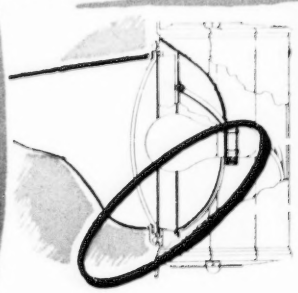

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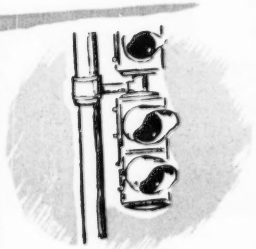

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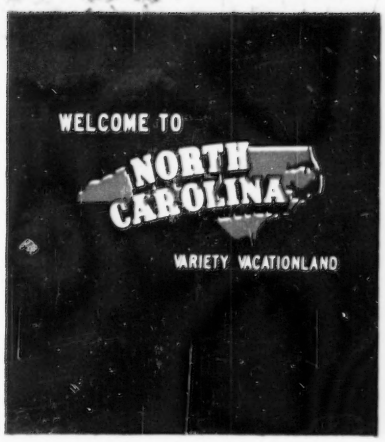

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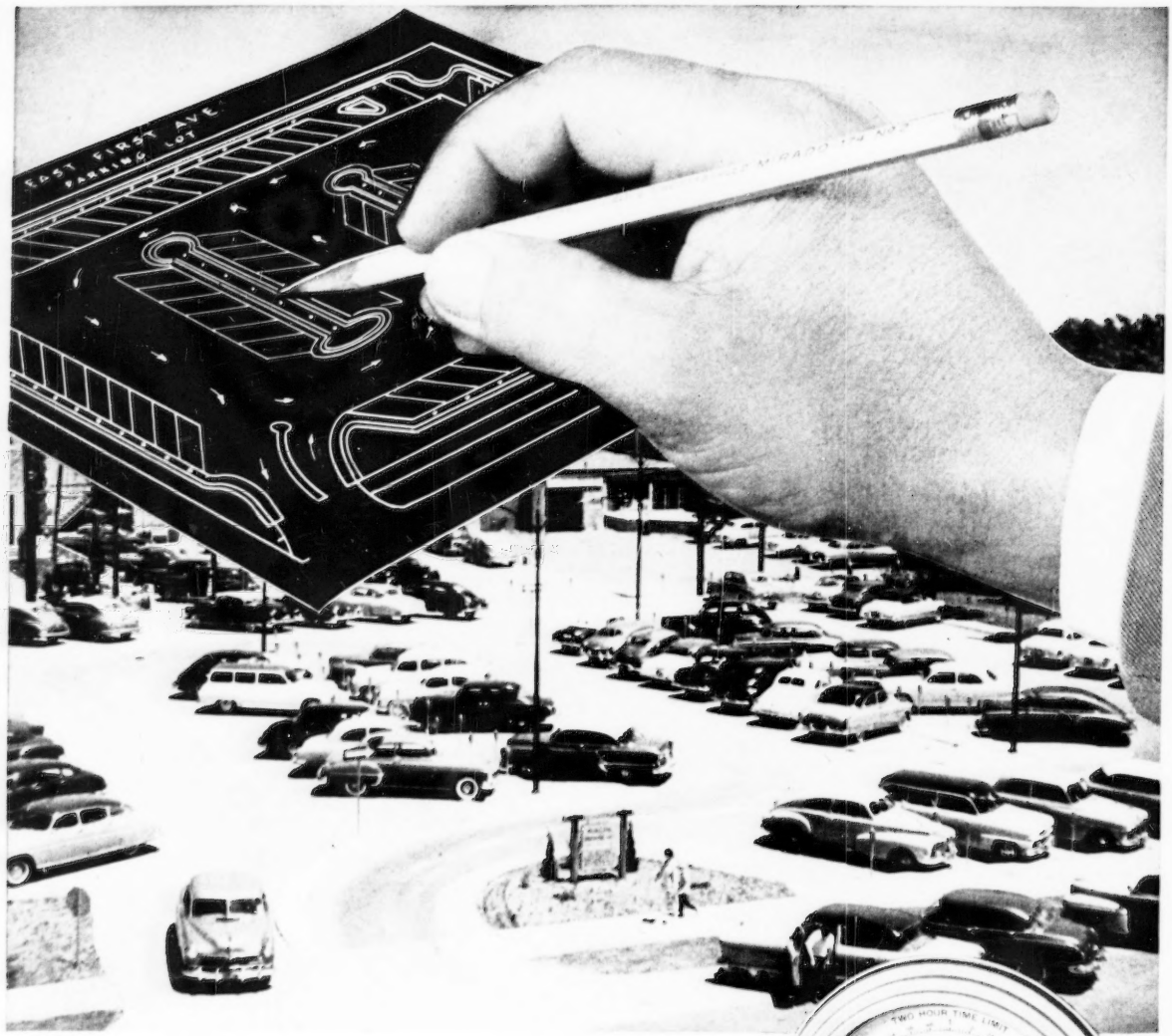

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Traffic Engineering

OFFICIAL PUBLICATION OF THE INSTITUTE OF TRAFFIC ENGINEERS

VOLUME XXIV | OCTOBER, 1953 | NUMBER 1

COVER: Chicago's Lake Shore Drive looking south from Belmont Overpass. The capacity providing divisional fins are shown in operation during the evening rush with the roadway divided into six lanes northbound and two lanes southbound. It is apparent from the car spacing that two lanes are adequate for the counter rush movement and is not being penalized by its restriction to two lanes.

Photo: Chicago Park District

Traffic Engineering is that phase of engineering which deals with the planning and geometric design of streets, highways, and abutting lands, and with traffic operation thereon, as their use is related to the safe, convenient, and economic transportation of persons and goods.

May We Offer . . .

New Challenge to Scientific Toll Collection — 7
Holden A. Evans, Jr.

Traffic Trends — 9

Human Engineering for Traffic Safety — 10
Frederick L. Bell

Number and Distribution of Minor Property Damage Accidents — 13
A. J. Cope

24th Annual Meeting Paper
Light and Night Traffic Accidents — 16
David M. Baldwin

Mobile Display Brings Modern Traffic Control to the Nation — 18
Donald T. Carter

Buffalo is a Wonderful City — 19

ITE-GRAM — 22
S. G. Nowell, Jr.

Traffic News — 23

Personality — 30

Obituary — 31

Section News — 32

Looking Ahead — 33

Secretary's Column — 35

New Appointment — 39

Index to Advertisers — Inside Back Cover

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Frankly Speaking

1954 OBJECTIVE — ADVANCEMENT

TWENTY-THREE years ago this month, nineteen traffic engineers attending a National Safety Congress in Pittsburgh assembled one evening in one of their rooms to exchange ideas and discuss means by which some new techniques and developments by one of them could be passed on to the others through some common source. It was recognized that such steps were necessary as the automobile growth had increased by leaps and bounds and inadequate streets were blocked with serious congestion. Before this meeting concluded, the Institute of Traffic Engineers was founded.

In spite of the improvement in traffic control which has been developed during the past years, the traffic problem today is even more acute, since automobile registrations have doubled and traffic volumes have tripled since 1930. With the problem recognized as more serious than at any previous time in the Motor Age, the public looks to the Institute of Traffic Engineers to provide new techniques which will alleviate the situation.

The Institute of Traffic Engineers has grown to an organization of 750 engineers and its membership spreads throughout this entire country and abroad. The same traffic problems occur in varying degrees in every large city and small town. Traffic engineers everywhere are faced with similar worries.

In the last three years the officers of the Institute of Traffic Engineers recognized the need for research and have established a Technical Council, consisting of six departments under which 41 committees function, which have a combined membership of 358 engineers. Research of any kind is a big job, particularly if it rests on one individual. It is therefore necessary that every member on every committee of the Technical Council do what he can to assist his respective chairman in obtaining necessary data to enable accurate conclusions to be drawn from the research studies being made. A traffic engineer whose time is cluttered with a host of minor details never finds time for the advanced thinking so badly needed by our profession. We have been concerned with the limited activity of the committees in the Technical Council. A progressive engineer will recognize the present predicament and will not be satisfied until he can do something about it. He will not be able to sit idly by and be content with knowing the problem exists, but will want to get to work so that he can take pride in knowing he helped to solve it.

In my opinion, I am inclined to believe that the present limited progress in technical committee activities is due to inadequate traffic engineering budgets in many of our cities and states. In many cases these budgets do not provide sufficient personnel to relieve the engineer and his immediate assistants for major research work. Good traffic control is important to the welfare of our communities. It behooves our members who presently are serving as city or state traffic engineers to ask for adequate appropriations and it becomes the duty of elected city and state officials to see that money is provided so that advanced traffic engineering studies can be made.

I hope all of our members will recognize the need for new traffic studies and will put both shoulders to the wheel so that by the next Annual Meeting the Institute of Traffic Engineers will have made new advancements which will benefit society and will have developed new tools which will enable traffic engineers to do a better job. I appreciate the confidence you have placed in me as President and will stand ready to work with you at all times. I am certain that by working together we can accomplish much toward the above objective.

President

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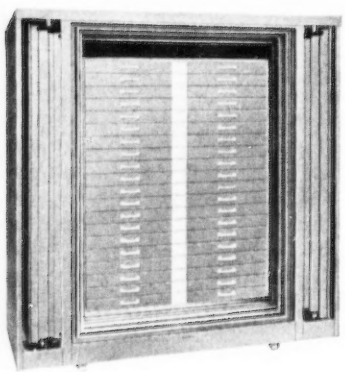

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New Challenge to Scientific Toll Collection

By Holden A. Evans, Jr.

Executive Assistant to Chairman, New York State Thruway Authority, Albany, N. Y.

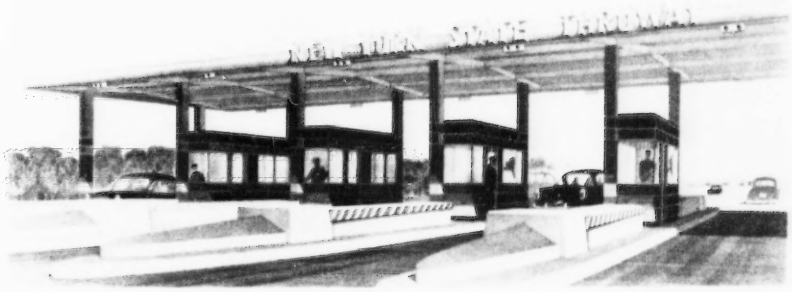


Fig. 1
Artist's conception of a projected 5-lane Toll Plaza on the New York State Thruway, showing cars leaving on the right, and entering on the left. Booths are equipped for reversible operation.

This article reprinted with permission from the JUNE QUARTERLY of the American Bridge, Tunnel and Turnpike Association, Inc. discusses the original problems in design of an adequate revenue protection system which were presented by the 427 mile New York to Buffalo Thruway.—EDITOR.

ONE OF THE more significant aspects of postwar traffic engineering has been the emergence of the toll facility to the forefront of our national consciousness. The resounding financial success of such projects as the Pennsylvania and New Jersey Turnpikes has pointed the way toward a solution to some of our most pressing highway problems. Public officials, confronted on the one hand by inflated construction costs and on the other by tight budgets, are turning more and more to self-sustaining projects as the only feasible way out of the dilemma.

The spread of the toll road movement, particularly, is as amazing as is its universal public acceptance. Of interest to all of us in this toll road revival is the challenge it presents to those responsible for collecting the fares. How can we assure the maximum revenue from the project and safeguard the investment of the bondholders? This is a double-edged question of paramount importance as state after state turns to credit financing of needed express highways and to the pay-as-you-ride principle of liquidating the debt.

Knotty as the problem is generally, it becomes tremendously complex on the New York State Thruway, now under construction all along the 427-mile route from New York City of Buffalo. Presently scheduled for completion late next year, it will be the longest highway of its kind in the world. Originally conceived as a free road, then as a facility to be paid for through the sale of annual user permits, the Thruway is now being constructed as a toll facility of the interchange type with variations. The variations are largely responsible for the complexity of the toll collection job.

From New York to Buffalo there are 57 "trumpet" type toll interchanges, 19 conventional free interchanges, three highway toll barriers and one toll bridge barrier. As the motorist leaves New York, the first four miles of the Thruway through Yonkers are, by law, toll free. There are six free interchanges in this section. He will then pass through a toll barrier such as is now found on the Westchester parkways. From there to the Hudson River Bridge he will pass four more free interchanges. At the bridge he will pass through a regular toll bridge barrier following which he will pass four more free interchanges. After passing the Spring Valley interchange he will enter the "controlled" section of the Thruway. This section is operated basically the same as existing toll turnpikes: a ticket is picked up by the motorist as he enters the system and surrendered with payment when he leaves. The end of the "controlled" system is at Williamsville. Beyond this point are four more free interchanges leading into Buffalo.

Permits, Charge Accounts Make Complications

Although the variation of interchanges and barriers creates problems, the principal complication is the availability to owners of New York-registered passenger cars of an annual permit allowing unlimited use of the roadway without payment of additional fees. The exception is that an annual permit will entitle the holder to a half-rate toll on the Hudson River Thruway Bridge between Tarrytown and Nyack. Add to this the charge accounts available to commercial vehicles and you have a toll collection problem without precedent. Devising a system to fit this set of unusual conditions is among the toughest assignments any toll road authority ever had.

Fortunately, these problems were foreseen many months ago and the Thruway Authority has taken all possible steps to solve them in advance of the opening of the facility, rather than retroactively. In December 1951, the Authority

retained Madigan-Hyland, consulting engineers, to study the peculiar requirements of the Thruway toll collection system and to submit a report. The Authority and its staff conducted simultaneous research, studying all the toll facilities in the northeast and analyzing the strong points as well as the weaknesses of each collection system. The assistance that the various facilities rendered the Authority cannot be over-emphasized. We are particularly grateful to the officials of the Pennsylvania and New Jersey Turnpike Authorities, who so generously devoted so much of their time to assisting and advising us.

From the wealth of information and advice gathered during these studies and conferences, the consulting engineers developed the basic recommendations for a Thruway toll collection system and submitted them to the Authority. These form the framework of the system finally adopted. We believe it will handle traffic swiftly and smoothly, that it is highly efficient and economical, and that it has more safeguards against leakage than any existing method.

$2,447,000 Equipment Contract

The basic toll station equipment is being manufactured by Taller and Cooper, Inc., of Brooklyn under a $2,447,000 contract awarded by the Authority during May after a careful scrutiny of proposals submitted by several firms. The Authority recently authorized the execution of a contract with Remington Rand for the office tabulating equipment.

On the surface the Thruway toll collection system does not differ substantially from those in use on existing turnpikes. The basic element of the Thruway interchange control system is the tabulating card which is picked up at the entrance and surrendered at the exit together with the fare. Under the interchange system, two basic operations at entrances and exits provide the control required for revenue protection. The validation of fare tickets by the collector results in transaction counts and axle counts which are accumulated in a remote recorder and printed on tapes each hour as well as when a collector comes on or goes off duty. The treadle acts as an independent check beyond the control of the collector on the number of axles passing through the lane. By comparing the data recorded on the tapes, and allowing for certain adjustments, the collector's registration of vehicles can be checked. The revenue represented by the tickets is determined and accumulated automatically.

Vehicles passing through a barrier station will be classified by the collector, who records their passage by pressing the proper button and collecting the fare due, if any. Permit vehicles will constitute a separate classification of pleasure cars, evidenced by special permit insigne with no other fee collected except for crossing the three-mile Tarrytown-Nyack Bridge.

Cameras to be Used

Probably the most unique feature of the Thruway system is the provision for a camera which will be capable of taking a photograph of each vehicle crossing the treadle as it passes through the toll lane. The primary purpose of the camera is to verify the presence of the insigne indicating that an automobile classified as a permit vehicle actually is one. However, the camera will serve as an additional protection of revenues in other ways. The camera angle will be such that it will photograph only the vehicle, or the essential part of it, and not the passengers.

Another innovation of the system is the provision for revenue totalizing. This permits several features to be introduced which will simplify the office reconciliation work and achieve operating economies. One of these will be the accumulation of the indicated axles for each vehicle regardless of class into one axle accumulating register. This procedure will permit immediate verification with the net treadle count during any period, eliminating the cumbersome computation and accumulation of axles by class. Thus the desired information is gathered without involved complications, and an economy is effected by reducing the number of counters required for each lane. Revenue totalizing likewise simplifies office work in reconciling collector's accounts and determining revenue.

In the interest of clarity, let's follow the progress of Thruway patron John Doe on a trip. As he enters the Thruway at one of the controlled stations he proceeds to the booth where the collector visually determines the classification of his vehicle. A button on the ticket issuing machine, corresponding with the classification of John's vehicle, is depressed. If there should be any variation in the normal number of axles for the class the extra axle button is depressed. Immediately thereafter the machine issues a ticket which the collector hands to John and he proceeds on his Thruway trip.

Punched-Card Ticket

John probably will pay little or no attention to his ticket. If he inspected it, however, he would notice that the issuing machine has caused certain information to be printed on the ticket. This includes the entrance station number, the vehicle classification, the date and time of issuance, the issuing collector's number and a ticket serial number. He would also notice that the ticket is a form of card used in keypunch operations and that certain information has been punched into the ticket. If he could read the holes he would find that they indicate the entrance station number, the vehicle classification and any extra axles. While the machine was initiating the printing and punching, it was transmitting certain information to a remote recorder in the utility building. In this process one count has been added to the proper classification register. The correct number of axles for the class, with any variations, has been added to the axle accumulating register. As John's vehicle passed over the treadle each axle was counted and the count added into the forward treadle register. Through these processes at the entrance station a control is kept of the tickets issued and the collector is unable to issue tickets for more vehicles than are reported by treadle counts at his station.

At the end of the trip John Doe approaches the exit toll station and surrenders his ticket. If he carries a permit ticket and his car bears the proper insigne, he proceeds on his way. If he is a cash customer, he hands his ticket to the collector with his fare. In either case the collector inserts the ticket in the slot provided in the exit station machine and moves it into position. When in this position the machine will read the entrance station number and classification holes that were punched into the ticket at the entrance. On the basis of this information the machine is also hooked up to a remote recorder in the utility building and the fare amount is pulsed into one of the recorder units, adding the particular fare to the total already there. One count is added to the proper classification and the number of axles is added to the axle accumulating register. In addition, the machine sets up information for printing a receipt. This information includes the number of the exit station, the date, the fare charged and whether the transaction was cash or credit.

Should John Doe wish a receipt as evidence of his fare, the collector merely pushes a button on the machine and the receipt is printed. The entire cycle of the exit machine is four seconds. However, the information needed to collect the proper fare from the patron is available in the first two seconds of the cycle.

As at the entrance station, John's vehicle passes over a treadle which records a number of axles which should check with the number of axles as indicated by the collector in processing his transaction.

The camera in each entrance and exit toll lane will be actuated by the treadle with a time delay feature. As the front axle of each vehicle passes over the treadle the camera will snap a picture of the lower portion of the vehicle showing the presence of a permit insigne or charge account identification. Also included in the photograph will be enough of the vehicle so that its proper classification can be determined.

Although space does not permit a full discussion of the many involved and complex features of the collection system, some mention should be made of the proposed handling of commercial charge accounts. Because of their convenience to trucking organizations, these are expected to be widely used.

Charge Plates Adopted

In the approach to this problem the Authority, its consultants and Taller and Cooper, have turned to a principle employed for many years by department stores. Commercial vehicles traveling on charge accounts will carry a charge plate in addition to a charge account identification insigne. At the exit the driver will present the charge plate with his ticket to the collector, who will check the presence of the proper identification on the vehicle. The charge plate will be inserted in the exit machine simultaneously with the fare card. This will cause the account number and vehicle identification number to be punched into the fare card, which becomes media for charge billing in the central office. Each charge transaction will add one count to the charge transaction counter in the remote recorder. After processing the ticket, the collector will return the charge plate to the driver and file the ticket.

Space limitations render it impossible to describe fully the many office tabulating procedures involved in the Thruway toll system. In general, however, these fall into two stages—at the Division headquarters and at the Authority's central office in Albany. The reason, of course, for the decentralization is the length of the Thruway which would preclude prompt audits without the Division operations.

Division offices will have the responsibilities of preparing and transmitting information to Albany for the Advance Daily Report, sorting and counting the transit tickets, and reconciling collectors' daily accounts. The Central office will have three main functions: preparation of summary reports, billing of charge accounts and reviewing camera film. The latter activity will be confined to checking for the presence of proper permit insigne although the camera may be used for other checks.

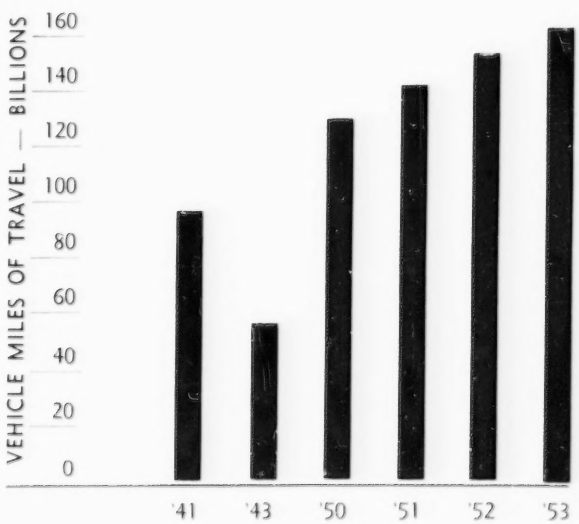
As indicated earlier, certain refinements remain to be worked out before the system goes into full operation. Fortunately, we will have an opportunity for a "dry run" in less than a year when we propose to inaugurate toll collections on a 150-mile Thruway section between Utica and Batavia. Many of the kinks will have been ironed out, we believe, before the main route from New York to Buffalo is opened to toll-paying traffic.

Believed to be Pilfer-Proof System

A toll collection system, like a chain, is only as strong as its weakest link. In the view of the Authority and the many experts who worked long months over the Thruway system, the system described represents the strongest chain of individual links yet devised. The importance of a foolproof system can hardly be overestimated. Inadequate control could lead to loss of revenue on a fantastic scale, so that the financial soundness of the Thruway might be jeopardized. Moreover, the voters of New York who pledged their faith and credit to Thruway obligations have a right to the utmost protection.

We believe they will have that protection. Although some details remain to be worked out, the Thruway toll collection system is a model for all future projects of a similar nature. Geared to mid-century traffic demands as well as to the unique requirments of the Thruway, it will assure a maximum of revenue for the Authority and a minimum of inconvenience for the traveling public.

Traffic Trends



TRAVEL ON RURAL ROADS FOR THE FIRST SEVEN MONTHS OF 1941, 1943, 1950, 1951, 1952 and 1953.

Based on Bureau of Public Roads Data

Human Engineering for Traffic Safety

By Frederick L. Bell (Assoc. Mem., ITE)

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This article is the first of three separate reports supporting the argument for a testing program for traffic regulatory signs. Part II will present a study of traffic accidents, highway types, and traffic volumes; Part III will be a study and analysis of the experimental sign test conducted in the field.—EDITOR.

Introduction

THE PURPOSE of this investigation is not to provide answers to specific problems; but rather, to review known driver behavior and characteristics and seek a basis of adapting these data to human engineering of highway traffic facilities and traffic control devices.

With 27.5 million persons using passenger cars daily in the United States to earn a living, and the experience of 37,000 traffic accident fatalities last year, the need and worthiness of this project becomes immediately apparent.[1]

The Driver: A Review of His World

The psychological explanation has been suggested that our driving behavior reflects, to some degree, our personality adjustment to society: "The road situation as an object of the driver is preeminently a social situation."[2] Implying, of course, that the driver, when behind the steering wheel of his auto, is in a special society with the additional restrictions imposed by the "rules of the road". This society is not unlike any other society, in that it is composed of many individuals of varied personalities: this society is not homogeneous.

The inference that certain drivers are non-conformists or perhaps possess abnormal personalities may be drawn from statistical analysis of the annual traffic accident toll. For example: the actions of drivers involved in 28,700 (75% of the total) fatal accidents last year were illegal with respect to the "rules of the road."[3] These illegal actions included: exceeding the speed limit, on the wrong side of the road, did not have the right-of-way, cutting in, passing on hill or curve, passing on the wrong side, failed to give signal, and reckless driving. The Cornell Word Form psychology test given in Michigan to a group of accident "repeaters" and a group of accident free drivers indicated that "repeaters" tend to have more personality maladjustments than accident free drivers. These maladjustments tended to increase among the more serious accident repeaters.[4]

These infractions of the rules of the particular society cannot, in every case, be blamed upon ignorance of the law or traffic regulation. The results of a controlled multiple choice test given 1,147 drivers, selected at random, to measure driver knowledge of traffic regulations is presented in Table I.

TABLE I

Age	Avg. Score On Test	Age	Avg. Score On Test
15	58.3	23	72.8
16	66.3	24	72.2
17	67.0	25-29	73.4
18	67.6	30-34	72.6
19	65.8	35-39	69.9
20	67.7	40-49	69.5
21	68.3	50-59	64.1
22	71.3	60-69	61.4

Acquiring experience in driving or "living" in the distinct social world of the motorist, does not necessarily improve the social attitude of a given personality. However, as the individual matures the rate of millions of miles traveled per fatal accident increases. Therefore, it may be assumed that rational conduct in the motorist's social world is a function of maturity.

Table II presents statistical data to confirm this assumption. It will be noted that, up to the age of 23 years, there is progressive improvement in the ratio of fatal accidents to millions of miles driven. It is possible that the abnormal (rash or irresponsible) driver begins to assume some degree of social responsibility at this maturity level.

TABLE II[5]

Age	Annual Mileage Estimated By Drivers	Millions of Miles Per Fatal Accident
16	4700	2.3
17	6600	3.5
18	7400	5.0
19	10200	4.7
20	11400	5.2
21	14000	6.4
22	15000	7.6
23	15500	9.7
24	17000	12.7
25-29	16200	12.2
30-34	16500	15.7
35-39	16800	16.8
40-44	16400	18.6
45-49	15100	21.9
50-59	14000	19.7
60-69	10400	12.1

The foregoing data would indicate that considerable improvement might be obtained by a psychological screening of drivers in the initial driver licensing examination, as well as, re-examination of accident-prone drivers to obtain a measure of their emotional social stability. Further investigation in this area is beyond the scope of this paper.

We have intimated that the driver is, himself, a very complex organism, and that prediction of his behavior is almost impossible. Further investigation will search for the controllable elements of his "world".

The problems confronting the driver as he travels from origin to destination are many, varied, and complex. The conditions contributing to the continued stimulation-response activity of the motor vehicle operator have been defined as "the total road situation."[7] The abnormal behavior of drivers is more difficult of measurement and less responsive to treatment, than is the total road situation. Knowing the psychological and physiological limitations of the operator, the total road situation, therefore, should be designed to compensate for these limitations.

The World of the Motorist: Total Road Situation

Horizontal and vertical changes in highway alignment require the vehicle operator to make a judgment of future road situations, both spacially and chronologically.[8] Highway design standards have been adopted that provide sufficient sight distance to minimize the need for second guessing by the driver, and reduce the possibility of his making "wrong" judgments.[9] A method of calculating the capacity of a given highway facility has been developed to the end that design of new facilities and reconstruction of existing facilities will provide for a minimum of congestion.[10] By providing adequate highway capacity, the population of the vehicle operator's world is held at a minimum; therefore, the driver is given a less complex total road situation on which to make judgments.

Traffic Regulation

Since the highway design standards, previously mentioned, provide for new construction and reconstruction, the crux of the problem, then, lies in the modification of traffic operations on existing highway facilities.

"Traffic regulations are of great assistance in the objective structuring of the field which makes it easy for the driver to judge the road situation."[11] Great progress has been made in this area, in that most of the nation-wide traffic control devices conform to a uniform standard in color, size, shape, and message. The question remains to be answered whether these standards are correct for their particular purpose.

Warning Signs: The sign standards provide that warning signs shall reflect a yellow background with the message in black letters or symbols. This sign, of distinctive diamond shape, warns the driver that a potential highway hazard exists that warrants a reduction in vehicle speed.[12] There is one notable exception: the stop sign. The stop sign is a regulatory sign and will be discussed in a later section of this paper.

Experimental tests have disclosed that the diamond shape and the yellow-orange background of the warning sign provide the best target value for all-year purposes.[13] Further, tests have shown that simple symbols are more easily interpreted than word messages.

Warning signs for extremely hazardous highway conditions use simple symbols; therefore, in light of these data and because the existing warning sign series are all constant in shape (diamond), color (yellow), and message (positive-require reduction in speed), it is proposed that the warning sign series remain unchanged for the present.

Regulatory Signs: Traffic regulatory signs are used to indicate the required legal restriction on traffic movement or use of the highway.[14] The color combination of a black message on a white background has been reserved for this sign. The exceptions to this standard color combination are: (1) the stop sign previously noted, (2) signs designed to regulate parking (green letters on a white background), and (3) signs posted to prohibit parking (red letters on a white background). The parking regulatory signs normally apply only during the daylight hours, in the central business districts of a municipality, and, consequently, they have little effect on moving traffic. However, the stop sign and other regulatory signs have meaning and purpose at all times.

The target-value of the black message on a white background color combination, under all light and environment conditions, is questionable. For example; a speed limit sign posted in an open area might blend into the sky light; a "No Passing on Bridge" sign might blend into the background of a white bridge railing. This was forcefully demonstrated in the sign testing program of the New York Thruway Authority.[15]

Further, traffic regulatory signs consist of two distinct categories, (1) positive in statement of action and (2) negative in action. For example; a positive regulatory sign would be "One-Way Traffic" or "Speed Limit—", while a negative sign would read, "No Stopping on Pavement" or "No Left Turn." *Whether or not the negative message promotes driving resistance is an area of suggested psychological research.*

A third possible trouble source of the regulatory sign is the subject of message. A review of the sign manuals of twelve states disclosed but one regulatory sign using a symbol to present a message: the one-way street sign.[16] The use of symbols may be problematical in this area; however, each sign message should be thoroughly studied for possible symbolic substitution. The United Nations conference on road signs and signals proposed standard regulatory signs using a combination of symbols and text; however, the signs have a "cluttered" appearance and lack the desirable simplicity.[17]

There is one creditable factor in the design of the regulatory sign. Tests of target-value of sign shape have indicated a high discernment factor for the rectangular design of the regulatory sign. Conversely, the one sign in this category that should result in the positive stimulation and response of the driver has a yellow background (same as the warning series sign) and is octagonal in shape. Dr. Lauer's studies of sign shape versus target-value proved that the message on an octagonal or round sign could be read from a greater distance than the shape of the sign could be discerned, resulting in the negation of the value of the stop sign's distinctive shape.[18]

From the foregoing data, it could be inferred that a different color combination for regulatory signs is needed, or possibly reversal of the existing practices with this combination. Further, signs having a positive message might be one color combination, while signs of a negative message could be of a different color combination. A third possible distinction could be the placement of the rectangle; that is, the longer dimension placed vertically for positive signs and placed horizontally for negative signs; however, the results of tests of driver knowledge (previously mentioned) have not indicated that such structuring of the regulatory signs would achieve the desired results.

Present practices of reflectorizing the signs call for the background to be bright reflectorized white, with the reflective material blanked out in such a manner as to present

the desired message by the absence of reflectivity. From the standpoint of visual perception, the white reflectorized letters on a black background would be more desirable.[19]

The stop sign is the most restricted of all traffic signs. This sign, while a regulatory sign, has the yellow background and black lettering characteristic of warning signs. Further, it may, from a distance, be confused (particularly at night) with the round railroad crossing sign as a result of the over-glow from reflectorization.

The stop sign is now being tested using a red background with white letters and border. Several municipalities and states, Florida included, have experimented with this color combination. Studies are now being conducted by the Florida State Road Department of driver observance of the new color combination in comparison with the standard. The red background should add considerably to the impact of the stop sign as a result of the long association of red with danger or stop. Since the analysis of these studies have thus far been cursory, detailed analyses are needed.

Observed driver disobedience of the standard stop sign warrants additional research in this area. There is an ever increasing sentiment that stop signs are used in instances where a less restrictive device might obtain the desired results. This undercurrent brought about the development of the "Yield Right-of-Way" sign. Tests using this sign to protect preferential streets in lieu of stop signs have met with considerable success.[20] Additional experiment and research on the "Yield Sign" is warranted; particularly should the color combination of this sign be evaluated in comparison to the stop sign, since they are similar in the severity of control.

Guide Signs: This sign series essentially gives the motorist such information as will help him along his way on the most simple and direct route possible.[21] An inventory of this sign series would indicate route markers, turn arrows, mileage distance, county and town names, and wayside park signs. This series has the same color combination (black message on white background) as the regulatory sign series.

The route marker and turn arrow signs (most important in this series) are effective in message presentation. The route marker is distinguished, primarily, by sign shape, while, the turn arrow presents a simple arrow symbol for direction. Difficulties arise in motorist apperception of these guide devices when several routes intersect, run concurrent, or separate. In this instance several guide sign assemblies are mounted on the same support.[22] The white background distracts the motorist's eye and makes it difficult for him to perceive his route with any degree of speed and accuracy.[23] This problem occurs most frequently in urban areas.

The practice of grouping route assemblies so that left turning routes are to the left of the assembly, right turning routes are to the right of the assembly, and straight-through routes are at the top of the assembly has helped to simplify this problem for the motorist. However, the tests of driver knowledge, relative to traffic regulations and controls, support the thesis of need for even greater simplicity.

The simplicity of color apperception has been demonstrated in several physiological studies, and this fact has been used extensively in business and industry.[24] The State of Mississippi has, to a limited degree, used route assemblies varying the background color. For example, a brown background for one route through the municipality, blue background for another route through the city, and so on. The motorist in this situation follows a color and is not required to read the route number even though it is given on the sign. The selection of proper colors to the end that no one color is more bright or attractive than another presents no problem. The subject of colors, their reflectivity, and contrast has been studied as previously mentioned.

Summary

1. The driver is a complex organism difficult to change or control.
2. The design of new highways and modification of existing facilities require human engineering if traffic accidents are to be reduced.
3. Warning signs most nearly meet the requirements for simple, distinct message presentation.
4. Regulatory signs require additional testing to achieve distinction and simplicity of message presentation. Some proposals are offered.
5. The standard stop sign should receive immediate attention to improve distinctiveness and legibility.
6. Guide signs could be made more effective in urban areas through the use of varied background colors; particularly where several assemblies are grouped on a single support.

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Number and Distribution of Minor Property Damage Accidents

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The purpose of this story was to revise 1951 traffic accident totals so that they would be directly comparable with 1952 accident totals. This was necessitated by a statutory change in accident reporting requirements. The results were of interest chiefly to the Bureau of Traffic, but certain other organizations, concerned with traffic accident distribution, may be able to utilize the information as it applies to their specific problems.—EDITOR.

Introduction

AFTER JULY 1, 1951, accidents in which property damage was $50-$99 were excluded from Illinois accident statistics due to a change in the reporting law. In order to compare the accident totals for the first half of 1951 with those for the first half of 1952 it was desired to reduce all first-half accident totals for 1951 by the number of $50-$99 property damage (P. D. 50) accidents.

Procedure

By means of a coding line for P. D. 50 accidents, punch cards were counted out for all categories of accidents except for the City of Chicago. The table produced by this coding and the method of coding are shown below as an illustration:

	Amount of Damage		Accidents All	Accidents Fatal
Veh. 1	$60	1 $50 to $99		
Veh. 2	$95	2 $100 to $249		
Total	$155	3 $250 to $499		
Veh. 1	$20	4 $500 to $999		
Veh. 2	$75	5 $1000 to $4999		
Total	$95	6 $5000 and over		

The example for line 2 illustrates that some accidents not reported under the changed statute (no single damage over $100) would not fall on line 1. Allowance was made for this factor by inspecting actual files to determine the correct number. This was then expressed as an overpercent of the line 1 figure to simplify computation. The number of accidents deducted by overpercent comprised 9% of the original group total. For this reason the overpercent was carefully calculated and checked—see appendix.

The deduction for Chicago accidents was determined entirely from sampling of actual cases. For each of the 6 months, 1000 cases were inspected. In these, Chicago P. D. accidents were tallied as having any single damage, whether more or less than $100. The percent of P. D. 50 thus obtained was then applied to the Chicago P. D. total for each month.

The deduction, arrived at through the procedure described, was allowed to stand after being subjected to exhaustive tests. Distribution of the deductions for specific counties and cities gave rise to many questions which were rationalized or checked in the files. One of the aims of this study was to investigate the distribution of P. D. 50 and this work was carried on throughout the procedure.

Distribution of P. D. 50

This portion of the study answers questions as to when and where the reported P. D. 50 accidents occurred. An assumption is made that since there are more P. D. accidents in winter, the portion of P. D. 50 would also be greater in winter; that there are more accidents of low consequence in winter. This was borne out by the following table:

Month	State Accident Total (I)	PD 50 Deducted (II)	Per Cent II-I
January	19065	5118	27
February	16360	4045	25
March	15139	2708	24
April	13566	3015	22
May	14325	3110	22
June	13465	3094	23
Total	91916	22088	24

The assumption was further substantiated through the monthly deductions made for cities. Key cities in northern, central, and southern sections of the state were selected for taking monthly statistics of P. D. 50. The deduction was

Major Deductions

Group	Original Total	Number Deducted by: Machine	Overpercent	Inspection	Revised total
Chicago	42653	—	—	10192	32461
All Others	49262	7264	4632	—	37366
State Total	91916				69828
		Expressed as % of 91,916			
Chicago	46.5			11.1	35.4
All Others	53.5	7.9	5.0		40.6
State Total	100.0		24.0 (all methods)		76.0

Fig. 1
Inconvenience, property damage, grief, money—
What is the price of haste and neglect.

greater in the northern cities and the seasonal variation was also greater. At this time a rising trend in repair costs ran counter to the seasonal accident trend. Otherwise, wider differences would be shown:

Deduction as Per Cent of Total

Cities	January-March	April-June
4 Northern	34.0	27.0
4 Central	28.7	28.3
7 Southern	22.3	21.7

Some of the variation in the amount of deduction for P. D. 50 could not be explained on a basis of weather or geographic location. The appearance of the results suggested that there was a relationship between the amount of deduction and the local rate of accident reporting. This correlation was established in a general way as shown graphically in the appendix. Specific examples were in counties where the reporting rate was known to be low (Madison and St. Clair) and the amount of deduction was near 18%. In counties with higher reporting rates (Champaign or Kane) deductions ranged near 28%.

P. D. 50 accidents comprised a larger portion of city accidents than of rural accidents. For rural state highway accidents, where the severity of accidents is great, the lowest deduction of 12% was made. The highest deduction of around 30% was made in cities ranging from 5 to 50 thousand population. In the larger cities the deduction was slightly less, a fact which may be the result of higher repair costs in the large cities.

	Original Accident Total	Revised Accident Total	% Reduction For PD 50
State Highways	13470	11822	12.0
County Roads	3115	2447	21.4
Rural Total	16585	14269	14.0
Below 1000	1177	746	36.6
1000-2500	2002	1446	28.0
2500-5000	2481	1779	28.4
5000-10000	5027	3473	30.9
10000-50000	12951	9011	30.4
50000 and over	51695	39104	24.2
Urban Total	75331	55559	26.0
State Total	91916	69828	24.0

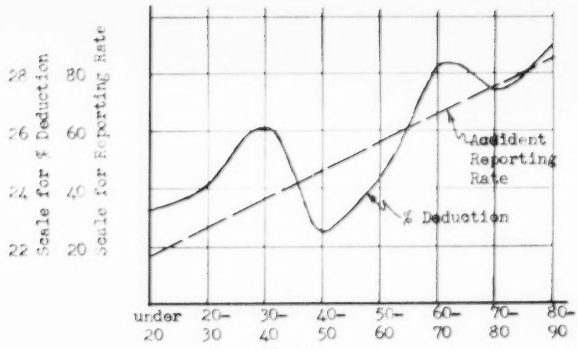

Fig. 2
GROUP AVERAGE OF REPORTING RATES
Comparison of accident reporting rate with per cent of deduction. Graph includes counties having more than 200 accidents in 1950. The accident total was divided by the amount of travel (rural, 1947) to give an accident reporting rate. Opposite each county was placed the per cent of deduction indicated by the P. D. 50. Counties with a rate of less than 20 were grouped and averages taken of their rates and per cent deductions. This was repeated for counties with rates of 20-30, 30-40, etc. The average rates and per cent deductions were then plotted.

Variation in Amount of Deduction Counties and Cities

While the deduction for P. D. 50 accidents amounted to 24 per cent for the state as a whole, there was considerable variation in the per cents deducted for individual counties. The least deduction was 15.9 for Montgomery County and the largest was 31.5 for DeKalb County. Counties having original totals of less than 200 accidents were not studied in detail for variation as small changes in deduction would produce abnormal percentage changes.

County totals are chiefly influenced by the totals of cities within the individual county. Further comparison of percentage variation was conducted through use of data for cities. In cities having more than 5000 population, the percentage of deduction ranged from a low of 4 at LaGrange Park to a high of 49 at Belvidere.

The percentage of reduction from original reported totals was plotted for cities over 5000 population in order of descending population to provide a visual check and comparison. A study of this diagram revealed nine cities where the per cent of deduction appeared to be excessive and three cities where deduction appeared to be short. These were investigated as follows:

a. The nine cities reported 1016 accidents of which 852, or 82 per cent, were property damage accidents. In seven cities paired according to location and size with the nine, and in which the percentage deducted was normal, 1190 accidents were reported of which 935, or 78%, were P. D. The excess deduction may be accounted for by the higher portion of P. D.
b. For each of the nine cities except Chester and Carlinville, other cities of comparable size nearby were found to have a sizeable deduction.
c. Among the nine cities were Dixon, Ottawa, and Carbondale which have highway district offices. High deduction was also noted in Paris and Effingham. This suggests a high rate of reporting P D. accidents, which would in turn account for a high deduction in the smaller cities having district offices.
d. Accident cases were inspected and the deductions which appeared to be too high at Carlinville, DuQuoin and Chester, were verified as correct. Among cities where it appeared that the amount of deduction was

too low, the files showed that Peoria Heights was correct; Robinson should have had four more deducted and LaGrange Park should have had four more. These changes would materially influence the per cent of deduction for the individual city but would have virtually no effect on figures for the state as a whole. Original totals were allowed to stand.

Having established the procedure to be used, computations were made for all categories of distribution. These amounts were then deducted from 1951 property damage accident totals and from the all-accident totals. The revised figures were used for county and city accident summaries for the first half of 1952 compared with 1951. The revised cumulative figures by urban and rural locations and by type of accident were inserted in monthly state-wide summaries of accidents beginning with June to give direct comparisons of 1952 accident totals with those for 1951.

Appendix

Determination of Overpercent

The purpose of this procedure was to express the deductible per cent of P. D. $100-$249 in terms of the P. D. 50 so that further calculation would be based on an accurately known count. Taking the number of P. D. 50 as 100 per cent, the whole deduction (P. D. 50 and P. D. 100) was something over 100 per cent of P. D. 50. This overpercent was to be applied to any category.

The month of March was selected as a medium month in which to make a check of the portion of accidents having total P. D. of more than $100 but with no single damage as high as $100. A sample of cases was examined for each location class.

Location	Number of Cases Examined	Number With No Damage of $100	Per Cent Under $100
1. & 2. Rural State Highways	40	9	22.5
3. County Roads	40	10	25.0
4. Under 2500 Pop.	71	20	28.2
5. 2500-5000 Pop.	40	15	37.5
6. 5-10 Thousand Pop.	40	7	17.5
7. 10-50 Thousand Pop.	40	15	37.5
8. Over 50,000 Pop.	40	9	22.5

These per cents were plotted and a curve drawn to obtain empirical per cents for trial use. These were then applied to the actual accidents of this class as shown below.

Location	Trial Per Cent I.	Number of PD $100-$249 II.	I. x II. III.	Number of PD $50-$99 IV.	III. + IV. V.	Overpercent V. + IV.
1. & 2.	22	603	133	187	320	171
3.	25	126	32	61	93	153
4. & 5.	33	347	114	182	296	163
6.	30	337	100	173	273	158
7.	29	864	250	377	627	166
8.	28	609	170	271	441	163
Total		2886	799	1251	2050	164 av.

Four counties were selected to ascertain the procedure for the use of overpercents. For a northern county with low population, Jo Daviess was used; and for high population, Winnebago was used. For a low populated southern county, Washington was selected and for high population, St. Clair. The specific overpercents were applied in each county according to location. This result was compared with an application of the average overpercent to the entire county. There was no material difference in the results despite widely varying conditions in these counties. It was then decided to apply the average overpercent of 164 in all locations as a standardized procedure.

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Light and Night Traffic Accidents

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THIRTY-EIGHT THOUSAND men, women and children were killed during 1952 in motor vehicle traffic accidents in the United States. This is the largest total since 1941, when 39,969 persons died.

It is perhaps a minor satisfaction to know that on a rate basis 1952 was the best year ever recorded. In 1925, when the calculation was first possible, the mileage death rate in this country was 17.9 deaths per 100,000,000 vehicle miles. This has decreased quite steadily to the current low point of 7.3 recorded in 1952. In 1941, when deaths were only slightly higher than last year, the mileage death rate was 12.0 per 100,000,000 vehicle miles.

Slightly over 70 per cent of last year's traffic deaths occurred in rural areas outside cities and towns. The total is estimated at 27,000 in rural areas and 11,000 in urban areas. It is interesting to compare this with 1941, when the rural total was just under 26,000 and the city total was slightly over 14,000. The percentage of the total deaths which was reported for rural areas has remained almost constant, however, for the last four years, which perhaps indicates that the trend toward an increasingly large rural death proportion has been halted.

Of primary importance for this discussion, however, is the fact that 45 per cent of the total deaths during 1952 occurred during hours of daylight and 55 per cent during hours of darkness, (including dusk and dawn). The year before, 1951, saw 56 per cent of the total occurring during hours of darkness, while in 1941, 58 per cent of the total were during night hours. This trend is hardly great enough to arouse either gratification or concern.

Of some importance in this matter is the fact that while 55 per cent of fatal accidents occurred during hours of darkness, only 38 per cent of all accidents occurred during night hours. Thus the severity of night accidents would appear to be considerably greater than that for daytime accidents.

It is also interesting to note that when urban and rural accidents are considered separately, the night time percentages vary slightly. For urban accidents, 59 per cent of the fatals occurred during hours of darkness, while in rural areas 53 per cent were nighttime accidents.

Both of these factors—that of increased severity for night accidents and the higher night percentage in urban areas compared with rural areas—can be related to pedestrian accident experience. Pedestrian accidents account for about half the urban death total in contrast with the situation in rural areas in which pedestrian deaths are but one-seventh of the total. Particularly in urban areas, pedestrian deaths are more frequent during hours of darkness.

Looking at the problem in another fashion, and taking into account relative travel during hours of daylight and hours of darkness, the night accident problem becomes even more severe. Based on the best estimates available, the mileage death rate at night is about three times the rate during hours of daylight. Thus it is safe to say that one's chances of being involved in a fatal traffic accident at night are three times as great as during the daytime. The rate at night is estimated at about fourteen deaths per 100,000,000 vehicle miles and for daylight hours about five deaths per 100,000,000 vehicle miles. This same proportion holds fairly well for urban and rural experience considered separately.

All of these statistics point clearly to the fact that night time creates special problems for drivers. There must therefore be some differences in day and night driving—the most obvious of which is the difference in visibility. Other factors which may contribute include fatigue, alcohol, and possibly differences in drivers themselves.

Let us examine these factors in reverse order, starting with the possible differences in drivers themselves. What had earlier been supposition in this area was recently confirmed by a study made by Dr. A. R. Lauer of Iowa State College. He sampled drivers on Iowa highways every hour of the day, studying nearly 5,000 cases during the period from fall to early spring.

It was found that speed of travel and age were inversely related at times when traffic flow was light. For instance, on rural highways between midnight and 7:00 in the morning, 51 per cent of drivers were in the 20 to 29 year age group, most of them 24 and below. The same 20 to 29 age group constitutes only 23 per cent of the daylight traffic and 24 per cent of the traffic from 5:00 P.M. until midnight.

Dr. Lauer reported evidence of a group of drivers (constituting about 10 per cent of the 20 to 24 year age group) flagrantly and dangerously violating safety rules from midnight to 4:00 A.M. He found only rare cases of excessive speed among other age groups or at other times of the day. The mean speed of all men observed was 47.6 miles an hour at an average age of 36.2. The mean speed of drivers between midnight and 5:00 A.M. was 50.6 and the average age was 29.3.

All of this points to the fact that particularly after midnight there is probably more reckless operation of motor vehicles than at other hours of the day, at least in proportion to the total amount of traffic. It would not be surprising therefore to find a proportionately higher accident experience.

It is extremely difficult to pin down any accurate information on fatigue. Accidents in which the driver is reported as "apparently asleep" are causing considerable concern, however, on facilities like the Pennsylvania Turn-

pike and the New Jersey Turnpike. These accidents seem to occur more frequently during hours of darkness, or at times when most human systems are accustomed to sleep. No real quantitative measures are available, however, to estimate the importance of this problem nationwide.

There is evidence to indicate that the incidence of alcohol among drivers reaches a peak during hours of darkness. In a famous study made more than 15 years ago in Evanston, Illinois, and reported in the *Journal of the American Medical Association*, very definite peaks were noted in the time distribution curve for drivers under the influence, both non-accident cases and accident cases.

Subsequent studies by the Michigan State Police and other traffic accident records agencies have identified similar peaks. In Michigan, for instance, 77 per cent of the accidents involving drinking drivers occurred during hours of darkness. A report on this study, which was made in 1947, includes this sentence: "Since most drinking and subsequent driving takes place during the evening and night time hours, the drinking driver is probably responsible for a substantial part of the increased accident rate during hours of darkness."

It seems clear, on the basis of this and other evidence, that there are a number of factors responsible for the increased accident rate at night. Different drivers, sometimes fatigued or even asleep, and sometimes under the influence of intoxicating liquor, all contribute to this experience. In addition, there is the very large and obvious factor of reduced visibility. The best evidence that the change in visibility contributes to increased night accident experience lies in the many examples of accident reduction following efforts to increase night illumination. Street lighting improvements have almost universally been followed by fewer accidents and deaths. Perhaps even drunken drivers are better drivers when they can see where they are going.

This experience of accident reduction following the installation of adequate street lighting is well-known. Detroit's experience has been established over a period of many years. Milwaukee, Kansas City, and many others have set substantial records in this area. Chicago is well on its way. The evidence is clear that adequately lighted streets bring about reductions in traffic accidents.

It is obviously impossible to attempt to assign any relative values to the influence exerted on the night accident rate by any of the factors mentioned. We can't, for instance, say that alcohol is a ten per cent factor, fatigue a five per cent factor, reduced visibility a fifty per cent factor, and so on. We do believe that all are factors and that any well-rounded accident prevention program must recognize that all are factors. Looking at the matter from that standpoint, the question then becomes one of what can be done about the situation.

Certainly the most direct and obvious approach is that of providing improved street lighting. None of the other problems offers an opportunity for such a direct approach toward a solution. Every city should examine critically its present street lighting program in comparison with IES standards and embark upon a program to bring lighting on its high-accident streets up to par. We know the results will be evident in a lower accident rate, in longer life and greater happiness for the citizens of the community.

LYLE Embossed Signs
HAVE 3-D ATTENTION POWER
NO PARKING THIS SPACE PLEASE
NO PARKING IN THIS SPACE PLEASE
LOOK TO LYLE
Here is a Lyle Sign which has been embossed, but not painted . . . and the deep dies which produced it. Your eye will tell you, the words are dramatically legible, even without the use of two color enamel finishes. Lyle Embossed Signs have third dimension attention power because the letters are formed in the material. Big value, Lyle Embossed Signs! Write for catalog.
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MINNEAPOLIS 14, MINNESOTA

Traffic Signals Mounted On Street-Light Standards

The practice of mounting traffic signals on street-light standards is very common in many cities in the United States. In fact, we would find it difficult to give names of cities which do not mount traffic signals on existing street-light standards—where the street-light standards are in proper location.

This is the important point—namely, that the traffic signals be properly located so they can be easily seen by the driver. There are so many intersections where street-light standards are already placed at the exact point where traffic-signal posts should be that it is logical and natural to mount the signals on the light posts.

No all-inclusive rule can be given because some localities use near-right and far-left signals, whereas others use far-right and far-left signal locations. In either case, it is quite often possible to use two of the street-lighting posts for signals.

W. H. PETERSON, *Manager*
Municipal Sales Division
Eagle Signal Corporation
Moline, Ill.
AMERICAN CITY, September, 1953

"Mobile Display Brings Modern Traffic Control to the Nation"

By Donald T. Carter

Sales Manager, Traffic Control & Floodlighting, Lighting & Rectifier Department, General Electric Company, Lynn, Massachusetts

MODERN TRAFFIC patterns and volumes require modern treatment with modern equipment. There is no question but what the flexibility and versatility of traffic actuated signalization is the best answer to many of the problems faced by today's traffic engineer.

For several years, G. E. engineers have recognized this situation and have also recognized that in many cases where vehicle actuated signalization was definitely indicated, it could not be applied, either because of excessive equipment cost, or because the difficulty of maintaining a highly complex piece of equipment presented a real problem in many areas. Early in 1953, G. E. announced the first of its line of traffic actuated controllers, the Type V Electronic, and the Type W Electromechanical. These first types were each designed in a variety of models to handle two phase intersections requiring either semi actuated or full actuated controllers. They were intended to reduce the cost and maintenance bugaboos to a minimum and thus make high quality vehicle actuated signalization equipment available to more and more traffic engineers who previously had to get along with less modern methods.

To introduce these new lines, and also to stimulate public interest in the problem of traffic control, the idea of a mobile display and demonstration was conceived. The specially designed display coach contains operating samples of both the electronic and electromechanical controllers as well as the popular "Type F" pre-timed controller. The equipment is arranged with electronically operated clocks to indicate elapsed time on each phase, and both manual and automatic arrangements for entering calls on both phases. Thus, just about any conceivable traffic situation can be set up, and its solution worked out just as it would be in an actual installation.

The coach started its tour in the southeastern part of the country, working its way up the Atlantic Coast area, into New York State and then into the Middle West. This fall and early in 1954 it will proceed south and west, working up the Pacific Coast and into the Rocky Mountain areas next spring, then back to the eastern section of the country. To September 1, it has visited more than 250 cities in 28 states. Twenty thousand miles have been covered and 25,000 guests have viewed the equipment.

Previous to its visit in any city, local G. E. engineers, officials, and traffic control distributors arrange the local program. They try to have their invitation list include state and city officials and employees who are, or who should be, vitally concerned with traffic engineering problems. In many instances, groups of "City Dads" are invited aboard and the equipment and personnel of the coach made available for a "Traffic School" designed to examine local problems and work out possible answers with the cooperation of local officials. In other cases, "screwdriver" sessions are set up, and local maintenance men get a condensed version of a factory training course in the maintenance of G. E. traffic control equipment.

Fig. 1
The streamlined General Electric traffic coach that is making a 30,000 mile nation-wide tour.

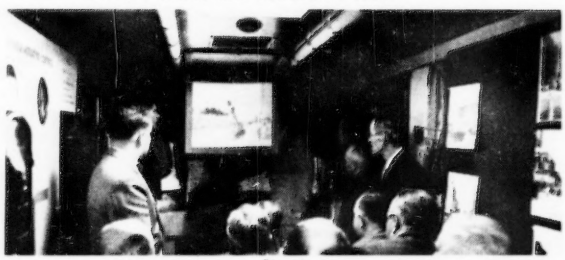


Fig. 2
The traffic display with its modern "classroom" on wheels will make more than 300 stops during the tour.

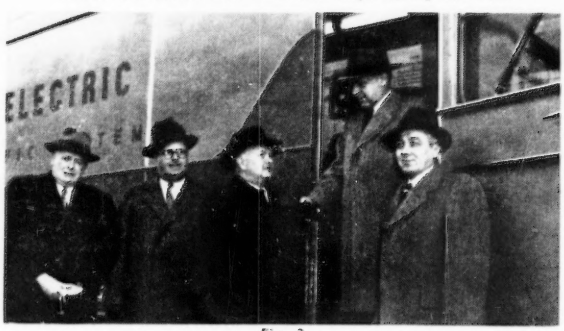


Fig. 3
Inspection of the new traffic display coach in Lynn, Mass.. (Left to right): P. T. Desmond, Boston Traffic Engineer; Edward McCarthy, Highway Traffic Engineer, and E. F. Copell, New England Manager, DeLeuw, Cather & Company, are welcomed aboard by R. J. Swackhamer, Manager of Sales for the Lighting and Rectifier Department, and James Callan, Municipal Signal and Supply Co., G. E. Distributor.

All demonstrations and sessions aboard the coach are supervised by one of a staff of four highly qualified engineers from the G. E. Illuminating Laboratory at West Lynn, Mass. Working with this factory representative is the District's Lighting Specialist and Sales Engineer who knows the local problems. In addition, a representative of the local G. E. Traffic Control distributor is aboard to greet his many friends and customers and help them with any problems they may wish to discuss.

Buffalo is a Wonderful City

A Report on the 24th Annual Meeting

The Buffalo Local Arrangements Committee's General Chairman Henry W. Osborne, genial and gracious host, and his wife Anita Osborne, Chairman of the Ladies' Arrangements Committee, as caricatured by Joe Prismo's show-stopping artist Sally Zippert, during the Institute's 24th Annual Meeting. (All of the Institute's Officers and Directors sat for Miss Zippert, and their caricatures will appear in subsequent issues. —Editor.)

WHAT IS IT ABOUT trying to meet 450 people, stay up late for business purposes, and attending a full day's schedule for four days that seems to make you tired, yet satisfied, at the end of those four days? Yes, that is what the 24th Annual Meeting at Buffalo was—a wonderful full four-day schedule that resulted in many accomplishments and pleasures for both the Institute and its members. We know that Kansas City has a lot of work ahead of them for the 25th Annual, and that Pittsburgh will start thinking about our 26th, so let us wish them luck in doing as fine a job as the Buffalo Committee did. Here is a brief summary of the many events and meetings that took place during the week of September 28th to October 1st at the Hotel Statler in Buffalo.

The Ladies

Monday—luncheon at the beautiful Park Lane Restaurant, a full excursion through the famous Kittinger Furniture Plant, "rest and relaxation" at the crowded Headquarters Room and then off with the men to the Town Casino, "The World's Most Fabulous Night Club, for a good roast beef dinner and a tantalizing two-hour show featuring the one and only Christine Jorgenson.

Tuesday, the girls left early in the morning for a day's trip to Canada and Niagara Falls. Lunch was served at the Sheraton Brock Hotel on the top floor, overlooking the Falls. The day was completed with a cocktail party and much conversation at the Headquarters Room.

Wednesday, all of the women had to sleep late, or if possible, went shopping. The evening consisted of the cocktail party prior to the very successful Cabaret party and a one-hour show in the ballroom of the Statler. Highlight of the evening was the illuminated dessert and the dramatic stage production featuring *Immediate* Past President Bruce Crandall.

Thursday, the closing luncheon and several planned field trips.

In Attendance

Joe Prismo, featuring Sally Zippert and her talented crayon, drawing caricatures of all who would pose throughout the entire week, was an exceptional attraction for all the conventioneers. The other ITE friends that made for many late hours and weary heads were: Marbelite, AGA, MMM, Eagle Signal, Portable Traffic Signal, Crouse-Hinds, Automatic Signal, Reflexite, G. E., Groce, Union Metal, Dual Parking, Union Switch and Signal, and K-Hill Signal. There may have been many others, but visiting all of these friends certainly was an enjoyable task for the 450 of us during the week.

Special Items

Monday's Kick-Off Luncheon was very well attended, at which time Dr. Charles Waters, Mr. Wade Stevenson, and Buffalo's Acting Mayor, Elmer F. Lux, spoke to the luncheoneers, extending both the key to the city and a warm welcome. Tuesday morning, 7:30 A.M., all of the wide eyed men attended the very entertaining Biscuit Banter Breakfast. Festivities and unexpected antics by Joe Prismo awakened all those who happened to be a little drowsy. Our cantankerous Headwaiter, the unique local talent floor show, the trick silverware, and the expensive "door" prize were all a part of the successful early hour event. At Wednesday noon an extra attraction was the Yale Alumni Luncheon. Robert S. Holmes, General Chairman, presided over the meeting. The 130 Alumni and their guests acted upon two items of business: The first was the election of Gordon Gravelle as General Chairman of the Association for the coming year. The Association also adopted two resolutions. A third motion pertaining to short training courses was postponed until a later date. Following are the two resolutions adopted by the Yale Highway Traffic Alumni Association:

WHEREAS, the demand for engineering graduates continues to exceed the supply, particularly in the field of civil and highway engineering, and

WHEREAS, the increase in automotive transportation and resultant congestion is further complicating the traffic and parking problem in the States and cities of the nation, and

WHEREAS, it is becoming increasingly difficult to secure qualified engineering graduates who have a keen interest in pursuing graduate study in traffic engineering, due to competition in other fields, now therefore:

BE IT RESOLVED, that the Alumni Association will make every effort to cooperate with the Yale Bureau staff in bringing to the attention of high caliber engineering graduates the advantages of this specialized training.

WHEREAS, the Annual Luncheon of the Alumni Association has been established as a permanent feature of the Annual Meeting, Institute of Traffic Engineers, and

WHEREAS, this luncheon affords an opportunity for class reunions, for "old grads" to get better acquainted with more recent graduates, and the holding of an informal business meeting to discuss mutual problems of concern to the Bureau and graduates, and

WHEREAS, the "Class of 1954" is present to participate in this luncheon and the Annual Meeting of the Institute and derive benefit therefrom in closer association with each other, the development of new acquaintances, and the opportunity to gain broad knowledge of current traffic engineering problems presented at technical sessions, now therefore:

BE IT RESOLVED, that the Director of the Yale Bureau be informed that it is the recommendation of the Alumni Association that future classes be afforded the same opportunity subject to limitations that may be imposed by the geographical location of the Institute's Annual Meetings.

A total of seventeen papers were presented at the four technical sessions. Session No. 1 held Tuesday morning, September 29th, was devoted to "Traffic Projects and Plans for New York State and Buffalo." Leon W. Corder, President, Missouri Valley Section, ITE, presided. The five papers at this session included subjects about the New York State Thruway, Buffalo Urban Highway Projects, Erie County Expressway Plan, Buffalo's Parking Garages, and Erie County Expressway Plan. Technical Session No. 2 was in charge of Earl J. Reeder of the Florida Section, ITE, and H. Dean Fravel, USBPR. The four papers at this session on planning were: Shopping Centers by Lloyd B. Reid; Parking and Its Importance to the Downtown Business District by Henry K. Evans; Transit Developments in Toronto by W. E. P. Duncan; and Redevelopment and Traffic by William H. Claire.

Session No. 3 was held on Wednesday afternoon, September 30th. The general subject was Operation, with four papers presented at the meeting. Edmund Ricker's paper on Traffic Characteristics of Toll Highways was a very good illustration of how useful traffic analysis is in its relationship to the planning and operation of a modern highway. The other papers presented at the third session were Driver Characteristics and Highway Operation by Dr. Theodore W. Forbes; The Pennsylvania Turnpike Joint Safety Research Project by Paul K. Eckhardt; and Sign Erection, Techniques, and Maintenance by Roger T. Chandler. Philip Ewart, President, Canadian Section, ITE, presided, and Maynard A. Beebee, Bureau of Highway Planning, New York State Department of Public Works, was the Session Manager.

The fourth and final session which was held on Thursday morning, October 1st, was devoted to the subject of Administration. Mr. Elmo Stuckey, Indiana State Highway Commission, presided. The titles of the four papers at this session were: Effect of Limited Access Highways on Property and Business Values by Richard M. Zettel; The Field of Modern Interconnected Traffic Control Signals by Harry A. Haugh; Light and Night Accidents by David M. Baldwin; and Traffic Controls in the Vicinity of School Zones by Lawrence Lawton.

A very important result of the Convention was the Report of the 1953 Committee on Resolutions. The following report of that Committee was unanimously adopted:

WHEREAS, the accommodation and entertainment of delegates and guests to the 24th Annual Meeting of the Institute of Traffic Engineers have been very enjoyable, and

WHEREAS, the program of professional and technical meetings and papers has been stimulating and impressive in the achievement of the objectives of the Institute of Traffic Engineers, and

WHEREAS, the patient, thorough, and loyal efforts required for the organization, planning, arranging, and conducting of this 24th Annual Meeting were recognized as outstanding,

(1) BE IT RESOLVED, that the Institute of Traffic Engineers expresses its profound gratitude and appreciation to General Chairman Henry W. Osborne, Honorary Co-Chairman Wade Stevenson and Dr. Charles R. Waters, of the Local Arrangements Committees.

(2) RESOLVED, that members in attendance at the 24th Annual Meeting of the Institute of Traffic Engineers, extend sincere appreciation to our many friends for their valuable services and contributions to the success of this Annual Meeting in Buffalo, September 28 to October 1, 1953.

(3) RESOLVED, that the members of Institute of Traffic Engineers extend their deep appreciation to Mrs. Henry W. Osborne and her committee for their cordial and imaginative efforts in planning and arranging the pleasant accommodations and entertainment of our wives while attending the 24th Annual Meeting in Buffalo, September 28 to October 1, 1953.

(4) WHEREAS, our esteemed member, Mr. F. Bruce Crandall, has devoted untiring efforts to the advancement of the Institute and its objectives for the past eight years, in the capacities of Director, Vice-President, and during the past year, as President, and

(5) RESOLVED, that the membership of the Institute, on this occasion of the 24th Annual Meeting, at the time of his retirement from the presidency, hereby expresses its deep and sincere appreciation to him for his wise counsel, his inspirational leadership, and his generous contributions of time and effort.

(6) WHEREAS, the members of the Institute of Traffic Engineers, at their 22nd Annual Meeting in Los Angeles, California, September, 1951, adopted a resolution offering their services to a Civil Defense program, and

WHEREAS, new developments in atomic and thermonuclear weapons continue to create a threat to the future security of the United States, and these developments have reached such proportions that existing policies of limited movement of persons from target areas may revert ultimately to plans for total evacuation of such areas, and

WHEREAS, the Federal Civil Defense Administration is negotiating an agreement with the U. S. Bureau of Public Roads whereby the Bureau would undertake certain phases of the development of a national civil defense highway network, and

WHEREAS, the implementation of such a program must be by State, county and local governments, and the traffic engineers in these various levels of government are uniquely qualified to develop plans for civil defense emergency routes,

RESOLVED, that the members of the Institute of Traffic Engineers enter voluntarily into this new phase of civil defense preparedness in their own community and that they offer their technical services and advice to their State and local Civil Defense Directors in the implementation of this program.

C. W. Prisk, *Chairman*
H. G. Higgins
R. S. Holmes
J. H. Mitton
F. H. Wynn

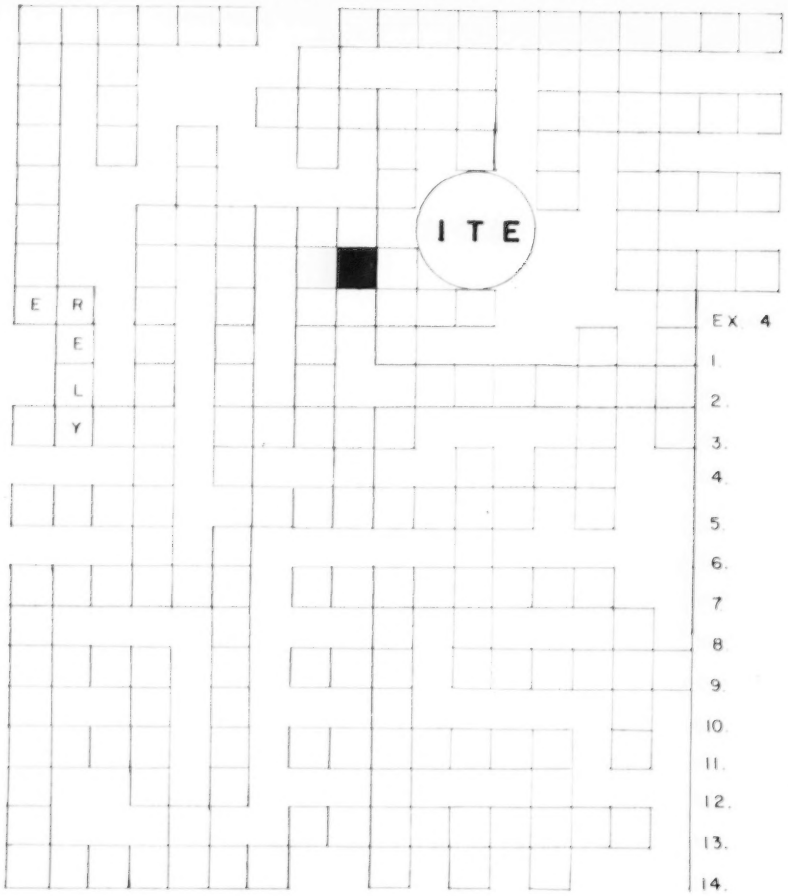
At the Cabaret Party the new officers, who were installed at the Annual Business Meeting on September 28th, were introduced to the group. They are: President, Donald M. McNeil; First Vice-President, Harry Porter; Junior Vice-President, Charles Prisk; Secretary-Treasurer, Theodore M. Matson; Continuing Directors, Paul Ristroph, Joe Havenner, Carl McMonagle; and new Directors, Robert S. Holmes, Matthew Sielski and Edward Wetzel. At this point of the program Professor Emeritus C. C. Wiley (Mem., ITE) was awarded the Certificate of Honorary Membership, which earlier had been voted by the Board in recognition of Professor Wiley's 46 years of teaching during which "he was responsible for the academic training of perhaps more men in the traffic and highway engineering field than any other individual." Professor Wiley is also very proud of being the sire of the only traffic engineering family in the ITE —his two sons, "Teke" and Thomas are both Institute members.

The third recipient of our Past President's Award was John E. Baerwald (Junior Mem., ITE) of Purdue University for his paper on the subject of Public Opinion Survey Methods. The Award of Merit in Traffic Engineering, presented to Baerwald by Mr. Nathan Chermack, is intended to encourage the conduct and reporting of independent and original research, and to provide a means for recognizing outstanding accomplishments in our field.

President Don McNeil has eliminated a majority of the Committee paper work for the coming year by innovating the new procedure of establishing all committees at the Annual Meeting, thereby foregoing the unnecessary delay of making and acknowledging appointments by letter. This outstanding achievement is visible evidence that the Institute's membership can look forward to a busy and efficient year of Committee work. President McNeil, at the closing luncheon, made special mention that "there is a great amount of work to be done." He also stressed the need for our younger members to become active on these committees. All members of the Institute should get in touch with the respective department heads of those areas in which you can best contribute your knowledge and efforts. All of these projects can use your efforts, so be sure to contact that department head in order to become an active part of the Institute's committee program. The committees as tentatively organized for this year will be published in the next issue. Additions and corrections will be made at the time the 1954 Yearbook is printed.

Grotelite
SMOOTH
S S
SURFACE
REFLECTIVE SHEETING
This highly reflective, smooth surface flexible sheeting makes a smashing, attention-compelling sign with greater day and night value. The smooth, self-cleaning surface can be screened, sprayed or brushed. It is easy to apply and makes the best long life signs and marking devices.
GREATER SAFETY
LONGER RANGE
DURABILITY
ECONOMY
Write for complete description, samples and prices.
THE Grote MFG. CO.
BELLEVUE, KY.
(Opposite Cincinnati)
STOP
STOP AHEAD

I TE-GRAM



S. G. Nowell, Jr., Contest Editor

The ITE-GRAM is not difficult to work, and it should provide some pleasure. All words (with exceptions) are taken from traffic engineering nomenclature and our advertising friends.

There are three parts: (1) Determining the words to fit the definitions. (2) Completing the skeleton. (3) How's Your Slide Rule Working? You may begin with the gift word—rely—but don't forget that a certain number of spaces does not mean necessarily one word.

Please submit your solutions to Puzzle Editor, care of TRAFFIC ENGINEERING. Winning awards and names will be announced in the future. In case of tie, the Contest Editor shall choose at his discretion. All solutions should be postmarked as soon as possible, and all entries become the property of the Contest Department.

There is no entry fee. Please do not collaborate! Good luck.

Two letter words
- Intermittent reference to spouse.
- "Where you can put your confidence."
- Common answer traffic engineers receive.

Three letter words
- "Stumsonite".
- Federal Agency.
- Top professional society.
- That which traffic engineers do not. (not sin).
- Surveyor's stake.
- Singular. Over 45,000,000 in the United States.

Four letter words
- "Remington . . . . Products."
- ". . . . Embossed Signs".
- National Society of Professional Engineers.
- Executive Secretary, top professional society.
- Singular. Used on all toll highways.
- Recorded information.
- Opposite the Editorial
- "Light Weight Champion".
- English road-edge.
- 4840 square yards.
- 8—15 ft. roadway strip.

Five letter words
- "Weaver Company, Jawco Traffic . . . . . "
- Not quite intra.
- "Reflective Sheeting."
- ". . . . . Signal Corp., Moline, Illinois."
- Meets in Pittsburgh in November.

Six letter words
- 1952-53 Vice-President of ITE.
- Director, YBHT.
- "Moisture Proof Reflective Marking."
- Important half of vehicular movement study by geographical zones.
- Traffic Engineer in one of nation's "heavy" traffic cities.
- "Automatic . . . . . Division."
- A highway in an urban area.
- "Manufacturers of Automaton and Miller."
- "Streeter-Amet's Ametron is a Trafi . . . . . "
- "Vitamic."

Seven letter words
- . . . . . way, divided type highway, full or partial access control.
- "No. 1 Choice in its Class."
- Empire State is building one.
- "The Versatile Twino-Matic, One of 4 types."
- "For Fast, Efficient Traffic . . . . . "

Eight letter words
- "Movable Traffic Signal."
- Every traffic engineer has it—it's a virtue.
- "3M's 'Beeline' Compound is . . . . . "

Nine letter words
- An erstwhile ITE President.

Two words.
- 4 words, 6 words, "In the Parking Meter Field . . ."
- 4 words, 7 words, "6 Reasons for Standing the Gaff."
- 4 words, 4 words, "Signs You Can't Miss."

HOW'S YOUR SLIDE RULE WORKING?

Elementary efforts, or just a slight review will enable you to whiz right through. Please use that slip stick!

Answers are to be placed in the appropriate area of the ITE-GRAM.

Ex. $2 \times 2 = 4$.

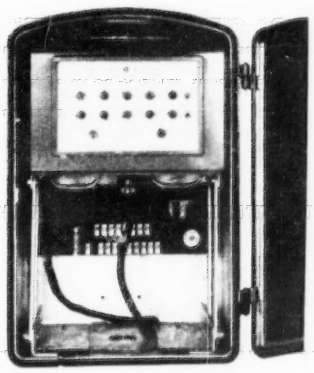
1. Square root of 8.34.
2. The cube of 1.63.
3. The cube root of 2.48.
4. $1.57 \times$ sine 3.48 degrees.
5. Tan 19.2 degrees divided by 3.
6. Log .863.

(Continued on page 38)

TRAFFIC NEWS

New Developments

Two new lines of vehicle-actuated traffic controllers, each having standard interchangeable jack-mounted components, have been announced by the General Electric Company's Lighting and Rectifier Department.



Vehicle-Actuated Traffic Controllers.

Unitized jack-mounted component assembly is a feature pioneered in the G-E Type F controller. According to General Electric engineers, the unitized construction together with simplified elements make the new controllers as easy to maintain as pre-timed models.

One of the lines—called Type W—provides the only completely non-electronic traffic controllers commercially available, while the second line—Type V—consists of electronically timed devices. Both semi- and full-actuated models are available in each line.

The new controllers are capable of detecting intersection traffic flow and allocating the "right-of-way" to each street in accordance with the relative volumes.

In a typical installation, vehicle detectors are placed in all approaches to an intersection so as to evaluate the traffic flow. Traffic actuates the vehicle detectors which in turn relay signals to one of the controllers. A signal-timer interpolates these signals and allocates the right of way in accordance with the density of traffic detected.

The Type V controller, which employs new, simplified electronic timing circuits, is expected to be particularly effective at intersections where the most efficient control is necessary. The full-actuated Type V is a density type controller.

The Type W controllers were developed as the result of popular demand for an electro-mechanical type of actuated controller. For those areas which maintain large systems of pre-timed controllers such as the G-E Type F and for those utilizing vehicle-actuated equipment in their traffic control systems for the first time, the Type W controllers provide a high degree of equipment standardization.

The new controllers are expected to reduce substantially the present traffic problems at critical intersections, especially where the flow of traffic is spasmodic or difficult to predict.

Although the majority of such intersections are found in rural areas and along main arteries, there are many urban intersections with similar characteristics that could be effectively controlled by this equipment, G-E engineers said.

Electronic Policeman.

An electronic "policeman" which automatically gives the right-of-way at a street intersection in accordance with the changing demands of traffic, may soon be standing on your street corner.

Developed by General Electric Company engineers here, the new device is, in effect, an electronic brain with an IQ on the level of "genius." When it "sees" excessive traffic over a particular street leading into an intersection, it automatically holds the green light on a longer period of time for that street. A decrease in traffic, and the "brain" shortens the green light period.

Special vehicle detectors are placed under the pavement in all approaches to an intersection to evaluate the traffic flow. Sustained periods of dense traffic over one street actuates the detector which in turn relays an electric signal to the traffic controller. The signal-timer electronically converts this signal into an extended right-of-way for the cross street with the dense traffic.

G-E engineers expect the new device to reduce substantially the present traffic problems at critical intersections, especially when the flow of traffic is spasmodic or difficult to predict.

Highway Safety Research Committee Briefs

The following items have been clipped from Highway Safety Research News Letter No. 6, edited by Dr. T. W. Forbes (Mem., IRE):

Subcommittee on Operations Research In Highway Safety Holds First Meeting

A Subcommittee on Operations in Highway Safety of the Academy-Research Council Committee on Highway Safety Research has been appointed which will be available to advise financial sponsors and research organizations. Chairman of the subcommittee is Dr. H. C. Levinson, widely-known consultant on Operations Research. Vice-Chairman is Mr. Taylor Lewis, Associate Professor of Highway Engineering, Cornell University. Mr. Lewis has had experience in Traffic Engineering and is at present (on leave) on the staff of the Operations Research Office, Johns Hopkins University. Members of the subcommittee contribute a wide range of scientific training and experience. They are J. Stannard Baker, Director of Research, Northwestern University Traffic

(Continued on page 25)

. . . the brightness of Stimsonite reflectors

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Reflectorization is a minor item in the complete cost of sign installation—and yet its failure makes costly sign replacement necessary. It would cost at least $280,000,000 to replace the more than 14 million traffic signs now in use in this country. In a four-year cycle, that's $70,000,000 a year.

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(Continued from page 23)

Institute; Hugh De Haven, Director, Cornell University Crash Injury Research, Cornell Medical College; Harold A. Edgerton, Director of Research, Richardson, Bellows, Henry & Company, Inc., New York City; Carney Landis, Director, Research Department of Psychology, New York State Psychiatric Institute; and Arnold H. Vey, Director, State of New Jersey Bureau of Traffic Safety.

Dr. Levinson is chairman of the NRC Committee on Operations Research which operates under the Divisions of Mathematics and of Physical Sciences of the Academy-Research Council for the whole field of Operations Research. He is also a member of the Council-wide Committee on Highway Safety Research under which the new subcommittee will operate. Dr. H. V. Gaskill, Dean of the Division of Science, Iowa State College, is chairman of the last named committee. Dr. T. W. Forbes, Technical Director of the Committee on Highway Safety Research, will work directly with the new subcommittee.

At its first meeting at the Academy-Research Council Building in Washington on April 30, 1953, the subcommittee discussed a pilot study of causes of traffic accidents which would be conducted first on modest scale in order to test out the most appropriate methods and to evaluate the contributions which can be made through Operations Research techniques.

The value of the many studies of accident records which have been and are being carried on and the value of accident records and accident reporting as a practical index for many purposes was recognized. However, on the basis of experience in other fields, it was thought that information on accident causes should be obtainable by Operations Research methods which is not obtainable from routine accident reporting and analysis.

It was felt that a pilot study will demonstrate the degree to which Operations Research techniques can help to uncover the fundamental but complex causes of traffic accidents. It is hoped that this will lead to broader and more comprehensive studies.

Automobile Driving and Drugs

Recommendations of the 1952 Highway Safety Research Correlation Conference and of the Subcommittee on Research Area Priorities also stressed the need for studies of the effects of ingested chemical agents on automobile driving. Phases of this question are (1) what are the effects of ingested chemical agents (everything from food to narcotic and other drugs) on driving skills, attitudes and other behavior and (2) to what extent are drivers on the highway operating under conditions of dangerously modified behavior?

Two sets of studies, undertaken for other than highway safety by two different research groups connected with universities and hospitals, have led the investigators to believe that certain commonly used drugs would produce highly dangerous effects on automobile driving attitudes and other behavior.

Certain laboratories which have carried on studies on such effects on behavior would be interested in carrying on further studies of this nature related to highway safety if necessary financial sponsorship can be made available. If the impressions of the investigators are correct, studies of both the categories mentioned in the first paragraph should be of importance. If drugs producing

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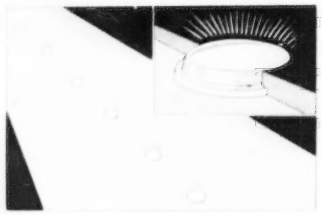

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such effects are being used by drivers, the facts should be ascertained.

The House Fly and Highway Safety

People used to think that the common house fly was a necessary evil to be combatted only by "swatting," just as many people now think traffic accidents are an inevitable result of human nature and can be combatted only by "socking" the reckless driver. True we still "swat" flies when they appear but we have few to "swat" because the public now knows that they are a real menace to health and backs public health measures to prevent their propagation.

This addition has been contributed by one of our scientist readers to the parallel between public attitudes toward traffic accidents and the attitudes toward public health matters (which have changed very markedly as a result of scientific research and public education over a period of years). (See last item, Highway Safety Research News Letter Vol. 1, No. 5).

He recalled the time when the house fly was regarded as a nuisance but not particularly serious. Everybody expected to have them around. No one at that time realized either the relationship between the house fly and transmission of diseases, nor that there were practical ways to prevent their propagation and multiplication.

Now that we know all these things, we may forget that the modern attitude has come about from public education based on much scientific research. We do not need to point out again the application to attitudes of the driving public toward traffic accidents.

Texas Establishes Highway Transportation Research Program

The Texas State Highway Commission and the board of directors of the Texas A and M College System recently announced establishment of a Highway Transportation Research program for Texas.

Technical staffs of both organizations will work on research problems covering all phases of highway activity, including economics, materials, specifications, design, construction and maintenance. Existing laboratories of all parts of the A and M System will be available for the studies and new facilities for the work have already been authorized by the System board.

Thomas H. MacDonald, recently retired as head of the U. S. Bureau of Public Roads, which position he held for many years, has accepted the position of Distinguished Research Engineer with the A and M System to work in this program.

Generally recognized as a world-wide authority on highway matters, Mr. MacDonald has been working in Texas since shortly after his Washington retirement, making preliminary plans for the highway research organization. Associated with him in this work is Gibb Gilchrist, long-time State Highway Engineer for Texas and a nationally recognized authority in his own right. Mr. Gilchrist retired recently as Chancellor of Texas A and M but remains with the system and will devote much of his time to this program.

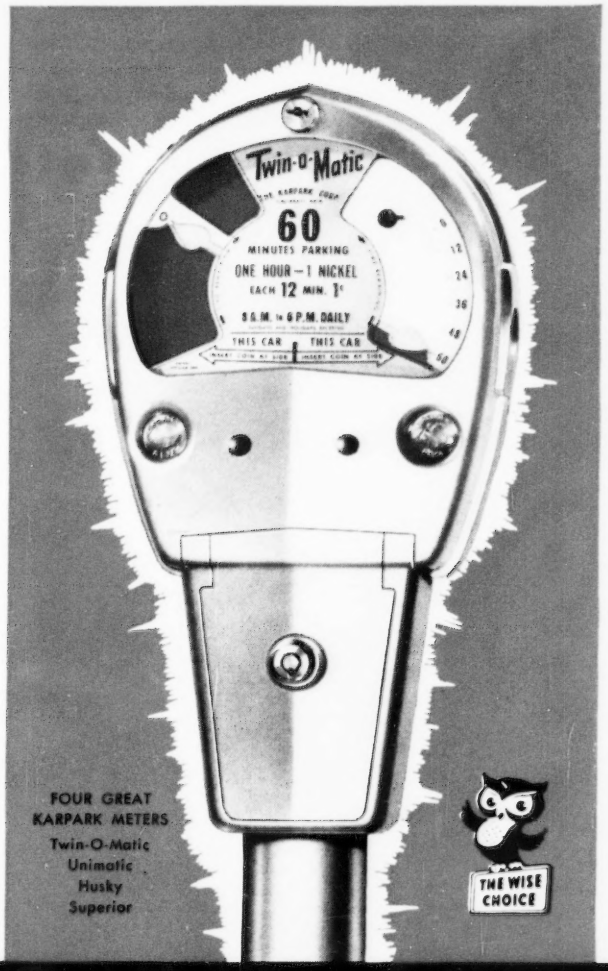
A proposal for this joint research undertaking was made by the A and M System and accepted by the State Highway Commission which designated the System as the official research agency for the Department. The Legislature has duly authorized the expenditure of Highway Department funds for research in this joint undertaking.

The State Highway Engineer and the Chancellor of the A and M System who had been designated to represent their respective bodies, signed a memorandum of agreement in December of 1952 covering the means to be used in carrying out the program. Since that time office space has been provided for the preliminary planning staff. An appropriation has been made by the A and M board for the construction of a building to serve as a center for the research program and plans are in progress.

Photo: Texas Highway Department

Gibb Gilchrist, Retired Chancellor of A&M, D. C. Greer, State Highway Engineer, and Thomas H. MacDonald, formerly head of U. S. Bureau of Public Roads, who announced establishment of a Highway Transportation Research Program for Texas.

Work of the program is to be undertaken on a project basis, with the joint approval of the State Highway Engineer and the Chancellor of the Texas A and M System required on each project. Projects will be proposed by members of both organizations' staffs through their respective heads. Once a project has received joint approval, a project leader will be appointed and a research



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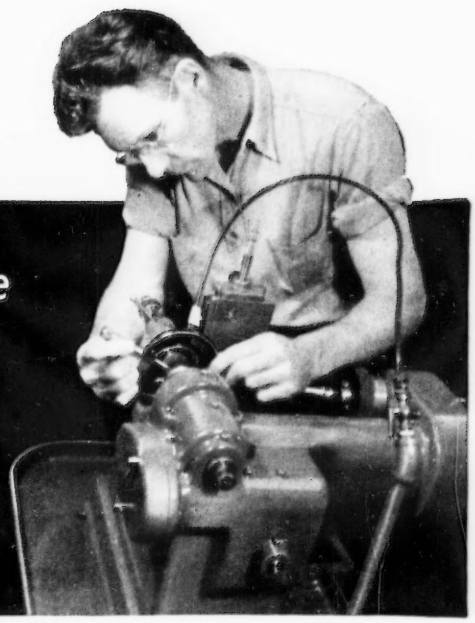

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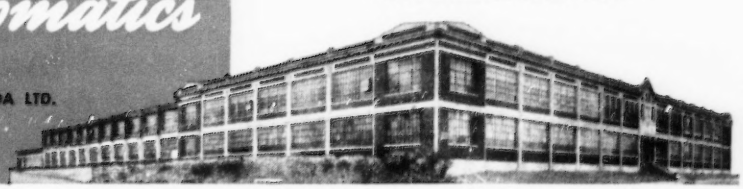

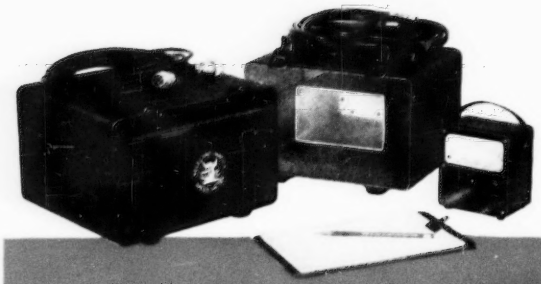

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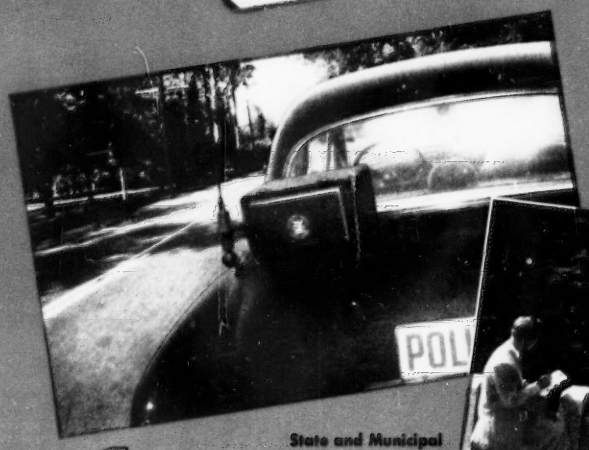

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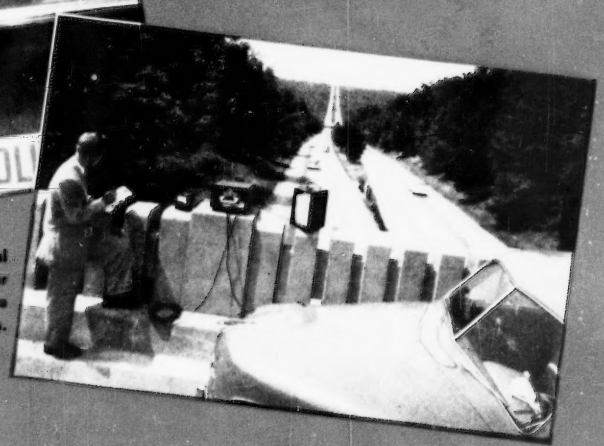

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staff necessary to carry out work selected.

Staff members from all parts of the A and M System, from the Highway Department and from other schools and agencies are eligible to work on projects where they are best fitted. The A and M System will make available its equipment and research laboratories without rental or depreciation charges.

Projects already approved under this program include a study of customer requirements of highway transportation, a study of the capacity of weak substrata soils such as those found along the lower coastal areas and river valleys to carry embankments for highways, inspection of welds in structural steel by gamma ray techniques, design of underreamed footings, improvement of asphaltic materials, a survey of library facilities available for the program and a study of the integration of highway, rail and air transportation and development. Many other projects are being studied for possible activation.

In discussing preliminary plans for the work, Mr. MacDonald pointed out that it must be broad in scope, covering economic and social factors involved in highway transportation as well as seeking solutions to immediate problems in design, maintenance and construction.

"Approaching this work through a study of customer requirements is fundamental in our thinking," he said. "We need to know, for example, what use is now being made of our highways by Texas industries, and from this to attempt to determine how these needs will grow as Texas industry grows. Highway planning must be long-range and it is necessary that we have some accurate estimate of future needs as a basis for sound planning."

State Highway Engineer D. C. Greer pointed out that the development of a sound research program of this type fits a particular need of the State Highway Department at this time as well as meeting its long-range objectives.

"As it becomes increasingly necessary for agencies of the State to conduct better work on the same or less money," he said, "need for seeking new means of doing the job more efficiently increases. We expect this research program to pay dollar dividends to Texas through the development of more efficient methods and the improvement of our highway program planning."

Chancellor M. T. Harrington had this to say, "We feel that the Texas A and M College System, with its large engineering school and important Engineering Experiment Station, its business and economic departments, is ideally fitted for this work.

"Many fine young men have gone from A and M into the highway field and for 30 years an annual Highway Short Course, sponsored by the State Highway Department and A and M has been held on our campus. We are glad that our continued interest in all phases of Texas highway problems has now borne fruit. We pledge our best efforts to this work."

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New Traffic Control Signs for New York

A new type of traffic control was introduced in New York City on October 19, 1953, when twenty signs reading, "YIELD RIGHT OF WAY," were installed at ten specially selected intersections throughout the City.

Commissioner T. T. Wiley also announced that the new sign was erected at intersections where traffic conditions require some type of traffic control but where traffic volumes, both vehicular and pedestrian, and other factors indicate that neither traffic signals nor "STOP" signs are warranted.

The sign measures 30 inches by 30 inches in size and is in the shape of a keystone. It has a blue background with the message in silver and the entire sign reflectorized to provide good visibility during the dark hours. For years the traffic engineering profession has sought to associate the shape of the sign with the message contained thereon.

A new traffic regulation covering the use of this sign has been formulated and reads as follows:

"The driver of a vehicle approaching a 'YIELD RIGHT OF WAY' sign shall slow to a reasonable speed for existing conditions of traffic and visibility, yielding the right of way to all traffic on the intersecting street which is so close as to constitute an immediate hazard.

"Proceeding past such sign with resultant collision or other interference with traffic on the intersecting street shall be deemed prima facie in violation of this regulation."

A motorist proceeding against the "YIELD RIGHT OF WAY" sign, therefore, must keep his vehicle under control to the extent that he is prepared to yield or give way to the driver or drivers approaching either from the right or left on the intersecting street, and must be prepared to come to a stop if necessary in order to yield this right of way.

Personality . . .

Cherniack Completes Thirty Years of Service

Who is one of our well known erstwhile ITE Presidents?

That's right. He is Nathan Cherniack, who has just celebrated and been honored for the distinguished completion of thirty fine years with the Port of New York Authority.

Nathan Cherniack

Nat's record with the ITE and his long period of service and contributions to our society are familiar and admired by all members of the Institute, yet his equally industrious activities outside the ITE merit our full recognition. Serving on the staff of The Port of New York Authority as Transportation Economist, he should be fully aware that his thirty years of experience are a deserving culmination of his energetic and pioneering efforts of the past.

A Civil Engineering graduate of 1922, MIT, his career is easily followed by describing the three major areas of study to which he has made both original and significant contributions.

(I) Early in his career (1924), primarily due to the paucity of writings on the subject, Nat became a pioneer in conducting origin and destination interviews and utilizing these data as a means of determining the economic feasibility of toll bridges and tunnels. Allied to these subjects, he also developed daily and hourly patterns of vehicular traffic movements in order to be able to convert traffic data for short periods taken in different months on different days of the week and for varying number of hours; into annual average daily traffic volumes.

The first origin and destination interviews in which he actively participated were made in 1924, in connection with the determination of the Port Authority's two Staten Island (New York)—New Jersey Inter-state Bridges, now known as Outerbridge Crossing and the Goethals Bridge. These bridges were opened to traffic in 1928. In 1925, Nat conducted vehicular O&D surveys for the George Washington Bridge, which was opened in October, 1931, and for the Bayonne Bridge, which was opened in November, 1931. Similar O&D interview studies of trans Hudson traffic were made in 1935. Recently, in 1949, about 135,000 interviews of trans Hudson motorists were made in connection with the Port Authority's Lincoln Tunnel Third Tube, now under construction. Nat's staff has just completed (August, 1953) about 183,000 O&D interviews at the George Washington Bridge, Lincoln Tunnel and Holland Tunnel in connection with a study of the fourth trans Hudson Vehicular Crossing.

In 1936 he was loaned out by the Port Authority to the New York City Tunnel Authority (subsequently merged with the Triboro Bridge and Tunnel Authority) to make O&D interview studies and to determine the probable vehicular traffic which the Queens Midtown and Brooklyn-Battery Toll Tunnels would divert from the four free East River bridges; also how much traffic might be generated. In connection with the determination of their economic feasibility, he prepared forecasts of annual vehicular traffic and revenues of these tunnels for several decades. The Queens-Midtown Tunnel was opened in 1940 and the Brooklyn-Battery Tunnel in 1950. Both are now in operation and financially successful.

A summary of Nathan Cherniack's research work on O&D data is contained in his paper which appeared in the 1940 "Transactions of the American Society of Civil Engineers" entitled "Measuring Potential Traffic of Proposed Vehicular Crossings."

(II) The second area of his original research work has been in the field of traffic patterns. A summary of these pioneer researches appeared in the 1936 Highway Research Board Proceedings entitled "Estimating Vehicular Traffic Volumes with Aid of Vehicular Traffic Patterns." The results of this study have been adopted and have been applied as standards in numerous traffic studies.

(III) The third area of significant and fundamental contributions in the field of traffic made by Nat has been in connection with the city parking problem. Nat wrote a paper entitled "A Statement of the Parking Problem" which appeared in the Highway Research Board Proceedings of 1946. In that paper, he concluded that the most effective long rangs attack on the city parking problems was through zoning amendments which could be adopted by cities, requiring new and substantially reconstructed buildings to provide their own off-street parking spaces and truck loading berths.

Since then, he has prepared a number of papers and has presented them before various organizations urging adoption of such zoning ordinances by cities and counties. In 1946, there was only a sprinkling of cities which had such zoning ordinances on their books. Today, there are more than 360 communities in 40 states and the District of Columbia which have adopted such zoning ordinances requiring off-street parking and truck loading berths. At the present Nat is Chairman of a subcommittee of the American Bar Association's Joint Committee on Urban Traffic Congestion and Parking, developing the legal foundations underlying the zoning ordinance approach. The ABA hopes to disseminate the work of this committee throughout the entire nation.

In addition to his Port Authority career, he has served as a special consultant with the following organizations: Ammann & Whitney, Consulting Engineers, traffic and economic aspects of the Milwaukee Expressway System; DeLeuw Cather & Company, Consulting Engineers—economic practicability of the proposed Union Truck Terminal in Atlanta, Georgia; Edwards & Kelcey, Consulting Engineers—report on the Chesapeake Bay Ferry System; Louisville Area Development Association—report of the economic practicability of the proposed Union Truck Terminal in Louisville, Kentucky; Parsons, Brinkerhoff, Hogan and MacDonald, Consulting Engineers—traffic consultant on

(Continued on page 38)

Obituary

ARTHUR H. BLANCHARD

Arthur H. Blanchard, one of our thirty Charter Members of the Institute, passed away on September 1, at the Newton Memorial Hospital, Newton, New Jersey. Mr. Blanchard was 76 years of age at the time of his death. He was born in Providence, Rhode Island, February 10, 1877. His extensive, successful, and fruitful career of service to the Institute and to the engineering profession will long be revered by his many friends and associates. He is survived by Mrs. Blanchard of Newton, New Jersey.

Mr. Blanchard received his C. E. Degree from Brown University in 1899, and his A. M. in 1902, from Columbia University. As an educator, he served as a Member, Faculty of Brown University (1899-1911); Professor of Highway Engineering, Columbia University (1911-1919); Professor of Highway Engineering and Highway Transport, University of Michigan (1919-1927). He was also a recognized leader in the engineering profession. As Deputy Chief Engineer, State Board of Public Roads of Rhode Island (1903-1909) he was a pioneer in the supervision of the first 24-hour motor vehicle traffic survey on state highways in the United States. During World War I he devoted his efforts and knowledge to the United States Council of National Defense as a member of the Highway Transport Committee, and at the same time he served as Chief, Division of Public Works, United States Army Over-Seas Educational Commission.

Following the war, he instituted the first under-graduate course in highway transport and traffic control in the United States at the University of Michigan. Mr. Blanchard, in 1920, was singly honored by the University of Michigan students when they presented him the Silver Cigar Humidor.

He also engaged in consulting work for the State Highway Departments of Michigan, New York and Pennsylvania; and for the U. S. Bureau of Public Roads. For a time he was Commissioner of Public Works, Borough of Manhattan. During his lifetime his many duties and clients called for his services as a Highway Transport, Airport, Patent and Contract Consultant, and in his capacity as a Consulting Highway and Traffic Engineer. Mr. Blanchard's career in the profession and his personal interests led him to many world travels and consulting opportunities. His travels and work took him to Canada, Brazil, Europe, Asia and various places throughout foreign countries as well as the United States. He was a United States Reporter to the Second, Third, Fourth and Fifth International Road Congresses.

His career, his pioneer contributions, and his world-wide professional value and experience are capably defined by his membership in many national and international societies. He was a Fellow, American Association for the Advancement of Science; Member, American Society of Civil Engineers, Society of Automotive Engineers, American Society of Mechanical Engineers, Automobile Old Timers, American Institute of Mining and Metallurgical Engineers, American Society of Tool Engineers and American Society for Metals. He was a life member of the Rhode Island Truck Owners' Association. As a result of his many travels to foreign countries, he was honored with: Member, Institute of Transport of Great Britain, Engineering Institute of Canada, and the Societe des Ingenieurs Civils de France, and the Union Interalliee of Paris. Appearing before the Societe des Ingenieurs, and the Ecole Nationale des Ponts et Chausses, he lectured in French on "Traffic Control and Highway Transport in the United States."

The professional history of Mr. Blanchard also includes his engineering publication work as Editor-in-Chief, American Highway Engineers' Handbook, Highway Engineers' Handbook, Highway Transport Handbook, and Traffic Engineers' Handbook. His engineering record includes the following offices: Chairman, Mid-Western Transportation Conference; Executive Director, National Pedestrians' Association; Past-President (1918-1919), American Road Builders' Association; President, International Institute of Transport; and, President, Institute of Transport.

Arthur Blanchard was a world traveler, consulting engineer, editor, educator, and a professional leader; but suprassing these individual contributions to distinction, is the recognized fact that Mr. Blanchard was one of the outstanding engineering pace-setters of our generation.

SECTION NEWS

Missouri Valley Section

A CORDIAL INVITATION

Members of the Institute of Traffic Engineers (all grades) are sincerely welcome and eligible to join the Missouri Valley Section if residing in the States of Kansas, Iowa, Missouri, Nebraska, Oklahoma or adjacent areas not covered by other Sections in the Missouri Valley areas.

Affiliate Memberships may be extended by invitation from the Section to a non-member of the Institute who is engaged in a field of activity closely allied to traffic engineering. The invitation to ITE Members is extended to strengthen the Institute through active participation in the local Section. Finances are no problem of the local Section, as the dues for membership are the nominal sum of $1.00 per year.

As Kansas City, Missouri, will be host to the Silver Anniversary Meeting in 1954, a strong local section in this area will be an important factor in insuring a highly successful and well organized meeting. It therefore behooves all Section Members to contact eligible candidates for membership in their area who are not reached by this paper.

EDITOR'S NOTE: Yes, Diogenes has finally found his man of truth!

DIOGENES LOOK NO FURTHER

(From stenographic notes, circuit court case, Missouri, 1952).

Direct Examination

Attorney: "State your name."

Mr. S.: "Thomas J. Seburn."

Attorney: "Will you state to us, Mr. Seburn, your present position?"

Mr. S.: "I am Director of the Traffic Department of Kansas City, Missouri."

Attorney: "I believe you have won the national award, to be presented tomorrow, for the leading traffic engineer in America."

Mr. S.: "Let's not be modest, let's make it the world. It's not quite as broad as you have suggested, but we do thing it is an outstanding achievement in traffic engineering in the award to be presented tomorrow."

Cross Examination

Attorney: "Mr. Seburn, weren't you rather extravagant in describing your position a few moments ago, when you suggested you might be the leading traffic engineer in the world?"

Mr. S.: "I'm sorry, sir, but I had no alternative, you must remember that I am under oath!"

* * *

NEWS OF WICHITA

The City Commission of Wichita recently adopted a traffic ordinance developed through the cooperation and efforts of the Traffic Engineering Division, the Traffic Division of the Police Department, the Police Court Clerk's office and the City Legal Staff. The ordinance closely parallels, wherever possible, the Model Traffic Ordinance. It replaces approximately fifty old ordinances relative to traffic control. The Traffic Engineering Division carried the ball on this project since its inception in 1948 and did most of the preparation of the text of the ordinance.

SIXTH U. OF MO. TRAFFIC CONFERENCE

The Sixth Traffic Conference, sponsored by the University of Missouri, the Missouri State Highway Department, and the Missouri Valley Section of the Institute of Traffic Engineers, will be held at Columbia, Missouri, during November. Watch for date announcement.

Midwest Section

The Chicago Park District is currently experimenting with a modification of the common two-compartment "Walk-Wait" pedestrian signal. Using the same signal housing but substituting a newly designed lens of square shape, enough space is obtained from the more desirable message of "Walk-Don't Walk." The color of the message has also been modified.

IT'S A LITTLE CROWDED

While the average number of persons for each car in the U. S. is 3.1, in Europe there are 45. However, this contrast is small when we consider that in Asia the average is 1,023 persons per car.

—NADA Magazine

* * *

MORT RAFF sent this one in: Divide a circle into four equal parts by drawing three straight lines inside of it. Each of the lines must be longer than the radius but shorter than the diameter, and the four parts must be two congruent pairs. We have two different solutions—do you have more?

* * *

CONVENTIONS-CONFERENCES-MEETINGS

Conventions, conferences and meetings are the subject of many jokes. As a result it has become popular to think of these affairs as glorified vacations, opportunities to get away from the office, and drinking bouts. Worse yet, too many people either attend these affairs with just such an attitude or stay away completely and never find out how wrong they can be.

The importance of getting to know people informally, of discussing professional matters off the record and exchanging ideas with others cannot be overemphasized. In a rapidly developing field such as Traffic Engineering, knowing what is being done elsewhere—and why—is part of keeping properly informed. To be able to discuss these matters with those in direct contact is to get information first hand.

The greatest opportunity available at such affairs is that of participating in discussions with those who know more about a subject than ourselves. This is without a doubt the best way to learn, especially with the diversified group attending most Traffic Engineering functions.

The difficulties of out-of-town travel often present problems which cannot be met unless special concessions are made, both by those in a position to request them and by those in a position to grant them.

Local gatherings, however, should not present any problems. Attendance at Section meetings and other local activities are a must for every member. Conflicts often occur, but with dates announced as far ahead as we have been getting them, we urge every Midwestern ITE to arrange his schedule to support his Section in all its activities.

TRAFFIC ENGINEERING CONFERENCE

Plans are well under way for the forthcoming Sixth Annual Illinois Traffic Engineering Conference. This two-day short course will be held at the University of Illinois in Urbana, Illinois, on Tuesday and Wednesday, November 3rd and 4th, 1953. The conference is conducted by the Department of Civil Engineering and Division of University Extension in cooperation with the Illinois Division of Highways, Midwest Section, Institute of Traffic Engineers, Illinois Traffic Safety Council, and Illinois Municipal League.

Last year over 100 traffic officials attended this conference, representing several states as well as city, county, and state traffic engineering and enforcement agencies in Illinois. This year's program is to be bigger and better than

ever with the majority of topics dealing with the items presently giving traffic officials the most trouble.

Western Section

Medical Advice

It is suggested that the best thing to take when you feel run down is the license number.

Denver

AL PEPPER reports that the 1953 Governor's Highway Safety Conference in Colorado came up with a strong one-point program. They recommended the establishment of an Engineering Committee responsible for preparing and disseminating information on Uniform standards and new developments in control devices. Active in the Engineering Division were AL PEPPER, HANK BARNES and JACK BRUCE.

Olympia

The Western Section bid farewell to its Secretary-Treasurer and charter member, WIN CARSTEN, at a meeting in Olympia, July 24th, held under the able chairmanship of BOB DUNN. Forty-eight members, friends and guests assembled at the Olympia Country Club to prepare Win for his trek to Houston, Texas, where he will take over the duties of Assistant Traffic Engineer.

The festivities commenced with a miniature display of a Houston "oil field" presided over by "SQUEEZE GLAZE." Dinner was served after the last "well" went dry. HERB HIGGINS acted as Master of Ceremonies and, following dinner, called on "WILD BILL" PEDERSON, Washington Personnel Officer, to accompany the group in a stirring rendition of "The Eyes of Texas Are Upon You."

After order was restored, W. A. BUGGE, Director of Highways, spoke in appreciation of WIN'S past 17 years of service with the department and Chief JAMES PRYDE, of the Washington State Patrol, added the regrets of that organization at WIN's departure.

J. AL HEAD, WesternITE Vice-President, when called on to speak, could only find words to pan the Washington Highways, which convinced the Washington Area members that the wrong man was going to Texas. (Where art thou, Justice?)

The Los Angeles Area, acting through their traveling representative, SKINNY DE YOUNG, presented a framed and autographed scroll best described as "Could anyone leave this for Texas?" and REX STILL followed with a mounted picture from "LIFE" entitled "Deep in the Drought of Texas."

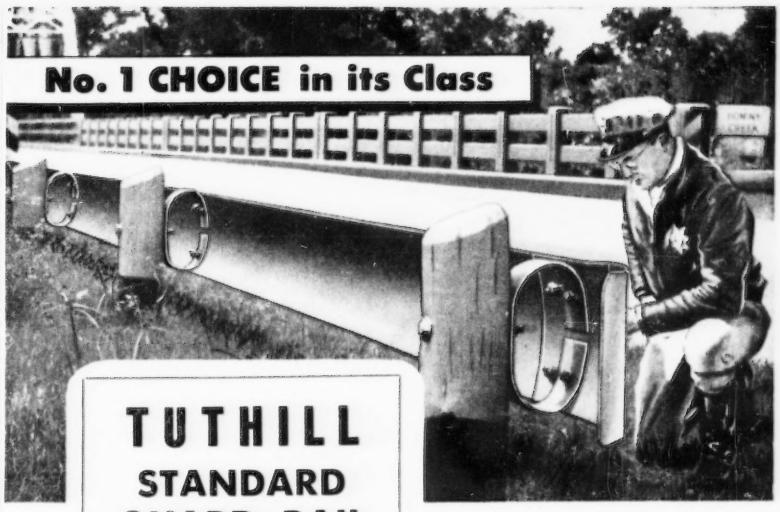
Finally, O. R. DINSMORE, Assistant Director of Washington Highways, presented Win with an Emergency Bottle of 100% pure Olmypia water. The meeting closed with the presentation on behalf of all present of a Two Suiter traveling bag with the hope that it would some day be used to return to the Washington Area.

Phoenix

The grape vine reports that WAYNE MORRIS has at last found an Assistant Traffic Engineer for Phoenix and one who can step right into the job. It's CHUCK HALEY, who left Phoenix in January to go with Barton and Associates in Evanston. It must be the prospect of another "Safety Conference" in Nogales that drew him back.

San Diego

JIM READING has returned from a trip to Milwaukee where he and HANK OSBORNE received honorary degrees in Electrical Engineering. On his trip, JIM visited Minneapolis, St. Paul (and MMM) and the Minnesota Highway Department.



TUTHILL
STANDARD
GUARD RAIL
(No. 4 Spring Bracket Shown)

Write today for Technical Brochure

Designed to meet Public Road Administration specifications for spring mounted Beam Type guard rail. Stiffer than standard-type TUTHILL brackets, the No. 4 gives shock-resistant deflection for rail, cushions shock to vehicle and occupants. Super-strong Hyway Guard requires only single bolt through post, little or no maintenance.

TUTHILL SPRING CO.
760 W. POLK STREET • CHICAGO 7, ILLINOIS

LOOKING AHEAD

NOVEMBER 2-4, 1953—URBANA, ILLINOIS
6th Annual Illinois Traffic Engineering Conference, Illini Unions Building.

NOVEMBER 2-6, 1953—KANSAS CITY, MISSOURI
Fall General Meeting, American Institute of Electrical Engineers, Muehlbach Hotel.

NOVEMBER 10-13, 1953—PITTSBURGH, PENNA.
American Association of State Highway Officials, William Penn Hotel.

NOVEMBER 29-DECEMBER 4, 1953—NEW YORK CITY
Annual Meeting, American Society of Mechanical Engineers, Hotel Statler.

JANUARY 12-15, 1954—WASHINGTON, D. C.
Annual Meeting, Highway Research Board, Academy of Science Building.

JANUARY 18-22, 1954—NEW YORK CITY
Winter General Meeting, American Institute of Electrical Engineers.

Gee, Advertising Baffles Me!

Once upon a time there was a man named Caspar who was very very cautious.

He always wore a belt and suspenders. He always carried two umbrellas in case he lost one. And he never took *anybody's* word for *anything!*

So it's not surprising that Caspar mistrusted *all advertising!*

"They can't fool *me*, with their nice-sounding advertising," he used to say. "Why I'd as soon buy something on the strength of an *advertisement* as I'd buy a pig in a poke."

So, as soon as a magazine or newspaper came into his home, Caspar would tear out all the advertisements. And of course he *never* listened to the "commercials" on his radio or television!

Now that was just *too bad*—for Caspar. For he never learned about wonderful *new* things until after everybody else already had them! And, by the time *he* heard about a "sale", all the merchandise was already gone!

But the saddest thing of all was that Caspar's mistrust of advertising was definitely distorted. . . .

Because He Didn't Realize This . . .

In the first place, no advertiser who expects to stay in business any length of time would be foolish enough to persist in false or misleading advertising. Because he knows his competitors would get right after him!

And even if they didn't, the Better Business Bureau would be hot on his trail.

And even if the BBB let him get away with it, the *Federal Trade Commission* would soon crack down! And even beyond the F.T.C. (which keeps an eagle eye on all advertising!)—there's still another force that keeps advertisers "in line. . ."

That force is YOU—and millions of other Americans.

Any advertiser who tries to fool "the people" soon finds out *it can't be done!* You'd soon put him out of business if his products didn't live up to their advertised claims!

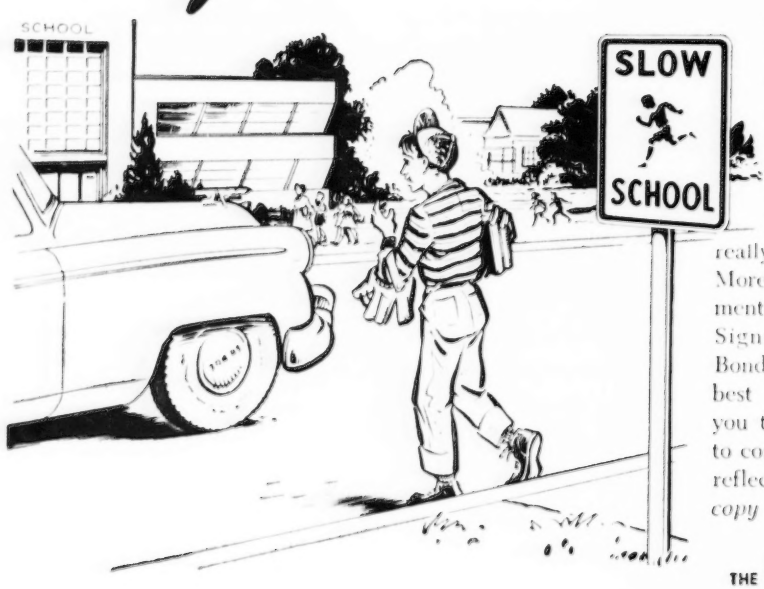
Now, of course, it would be wrong to suggest that ALL advertisers are absolutely honest—because advertisers are *people*, and not all people are honest! But do you know what the psychology boys say? They say that about *ninety-seven per cent* of all people are honest!

So, read the ads and listen to the radio and TV Commercials. You'll be at least 97 per cent safe in believing them. And it's *fun* to see how advertisers compete with each other to win *your* patronage!

More important, it's a wonderful way of keeping abreast of "what's new" in products, services, and improvements that can bring greater safety, or bigger values, or more comfort *to you!*

Don't look now, but isn't that Caspar reading the TRAFFIC ENGINEERING ads for this month?

Signs YOU CAN'T MISS!!



Give the kids in your community a break . . . by providing traffic control signs that actually "scream out" at motorists telling them what to do and where. You simply can't go wrong with Miro-Flex Signs, *America's finest complete sign line*, because their distinctive markings really stand out and are easy to read. More than that, they are a wise investment for the citizens, too. All Miro-Flex Signs are embossed on zinc-coated, Bonderized steel and finished with the best baked-on enamel which assures you that they will be around for years to come. They can be furnished plain or reflectorized. *Write for prices and your copy of Miro-Flex's catalog today.*

THE MIRO-FLEX CO., INC.

1824 EAST SECOND STREET WICHITA, KANSAS

Secretary's Column

The report of the Executive Secretary as presented to the 24th Annual Meeting will comprise the Secretary's Column this month.

Last year I said I was happy to stand before you as your Executive Secretary. If I was happy then I am doubly so now for I have had an additional twelve months to learn what a really great organization we have, and how down through the years the efforts of devoted officers and plain ordinary members striving toward a goal of an even better organization, have made it great. It makes me humble to realize that I am following in the footsteps of the volunteer pioneers who made this meeting here today, and indeed my presence with you possible—possible only because of the past efforts over and beyond the call of duty of many devoted members.

I have had an opportunity to read the minutes of some of the earlier Board meetings, to find that up until only five years ago it was frequently necessary, figuratively speaking, to pass the hat among our better heeled sister organizations to offset reoccurring deficits. For example, in 1949, the last year direct contributions were received, more than $5000 was given by nine different organizations interested in the Institute's welfare. I am proud that we do not have to pass the hat to finance the Headquarters operations anymore, but I am sorry it is still necessary for our Local Arrangements Committee to have to solicit funds with which to put on these Annual Meetings. I am confident that this will not be necessary but a very few years longer.

We have had another good year. In fact it has been the best year we have ever had in growth and finance. For the fiscal year ending December 31, 1952, our income exceeded our expenses by $3,796 as compared with a loss of $1,190.61 for the 15 months year ending December 31, 1950—the first fiscal period the Institute got along without contributions—and a gain of $187 in 1951.

Board Meetings

The Board of Direction held four meetings during the year, the first being at the Hotel Sherman, September 9, 1952, the second one at Washington's Hotel Statler, January 12, 1953, just prior to the Highway Research Board meeting; the third one also took place in Washington at the Statler, June 11 and 12, immediately following the meeting of the Joint Committee on Uniform Traffic Control Devices, since three of our Board members are also members of the Joint Committee. The fourth and final Board meeting was held here at this hotel yesterday afternoon.

It is difficult to pick any single administrative policy decision as the most important. Among those of great importance was the decision to employ a Business Manager for the magazine, in accordance with a recommendation of the Ways and Means Committee; adoption of a policy permitting the editor of the magazine to accept all advertising regardless of whether products advertised meet the Institute's standards or approval; a decision to simplify the membership form, together with the processing procedure without in any wise reducing the qualification requirements for membership.

Headquarters Operations

During the year one employee resigned and two new persons were added so that our total staff is now four, instead of three as was the case last year.

Miss Anne Leftwich, with nearly five years service, was promoted to Principal Secretarial Assistant last winter replacing Miss Pellegrino, who resigned to marry. Miss Leftwich is in charge of all accounting, billing, and office routine.

Miss Marie Mazza was employed last January 20th. In addition to handling the headquarters office processing of all applications, she attends to all changes in the membership roster and magazine subscribers, and the addressograph work.

The newest addition to the staff is Mr. Samuel Nowell, Jr., employed August 1st as Business Manager for the magazine. Already he has proved of tremendous assistance in the arduous task of publishing a magazine each month.

I am sure that few of you have any idea of what a busy place the Headquarters office usually is. Each week brings an estimated average of about 200 pieces of mail. We receive far more than anyone else in Strathcona Hall, although the chief office of at least two other monthly publications are located there. On a number of occasions Monday's mail has exceeded 100 pieces. Of course, something less than half is first class mail, and fortunately for me nearly half of the first class mail does not require my personal attention because of the fine work of the young ladies and Mr. Nowell.

Nine general mailings have been sent to all the membership during the year. These mailings have consisted of employment questionnaire, the dues statements and roster correction inquiries, the Nominating Committee report, the ballot for officers, the proposed Constitution and By-Laws amendment letter, the Yearbook and Proceedings, and three different reprints or booklets. Much as I would like to, I have not found time to resume the former custom of sending the membership a newsletter at frequent intervals.

Personnel Service

During the year we have answered a goodly number of questions related to traffic engineering. Many of these come from overseas.

Last winter we sent out a questionnaire to be returned by those who might be interested in accepting other employment; or who offered part or full time consulting service. We were delighted with the returns, which numbered almost 100, and the listing has been of great aid in suggesting names to possible employers. We believe our efforts have been instrumental in the placement to better advantage of about 20 of the membership. The employment field continues to offer more opportunities than the traffic engineering supply can meet. Many positions are still vacant because of a low salary.

Publications

Three hundred and twelve copies of Technical Bulletins Nos. 1, 2 and 3 have been sold since the first of the year.

Traffic Engineer's Reference Notebook

This year saw the sale of the last of 495 copies available for sale. While arrangements have been completed for issuing a supplement in the near future, there are as yet no plans for a second printing.

Traffic Engineering Handbook

I am delighted to be able to report that nearly all of the publication expenses underwritten by the Association of Casualty & Surety Companies have now been paid by the sale of the Handbook. As of September 1st, a total of 4925 copies have been sold including 825 copies sold during the past year. Sales continuing at the rate of about 65 copies ($360) per month should clear all indebtedness within the next 30 days.

1952 Proceedings

In accordance with an authorization of the Board the 21 technical papers

(Continued on page 38)

Reports from installations all over this country and Canada, from Alaska, Honolulu, Switzerland, bear out our contention that "In the Parking Meter Field, MI-CO's lead on all counts." Considering the purchase price, installation cost, maintenance expense, productiveness, long life and all around dependability, MI-CO Parking Meters are in a class by themselves.

A good product needs no better recommendation than the testimony of users. And we are willing to rest our case on what users are saying about the performance of MI-CO Parking Meters. We'll be glad to send you a list of the cities that have MI-CO's in operation. Ask any of them what they think of MI-CO Parking Meters.

There are two distinct types of MI-CO Meters. 1) The well-known manually operated meter for those who prefer to let the motorist wind the meter himself. 2) The original, time-tested Twin Automatic for those whose requirements dictate automatics. Both have outstanding advantages; both can be depended upon for low cost maintenance and consistently high earnings for many years. When you compare MI-CO performance and earnings records with those of other makes of meters, you will, we believe, be convinced that MI-CO has much to offer.

It will certainly be to your advantage to contact MI-CO if you contemplate a new installation, replacing unproductive meters, or enlarging present metered areas. Write us. We'll be glad to send you complete details about the features of both types of meters, and records of many installations—some more than ten years old.

MICHAELS PRODUCTS:

Store Fronts
Lettering
Check Desks
Lamp Standards
Marquees
Tablets and Signs
Name Plates
Astragals
Railings
Grilles and Wickets
Kick and Push Plates
Push Bars
Thresholds
MI-CO Parking Meters
Museum Trophy Cases
Bronze and Aluminum Doors
Bank Screens and Partitions

MI-CO METERS, 241 Court St., Covington, Kentucky

Division of The Michaels Art Bronze Co., Inc.

FOR SPEED

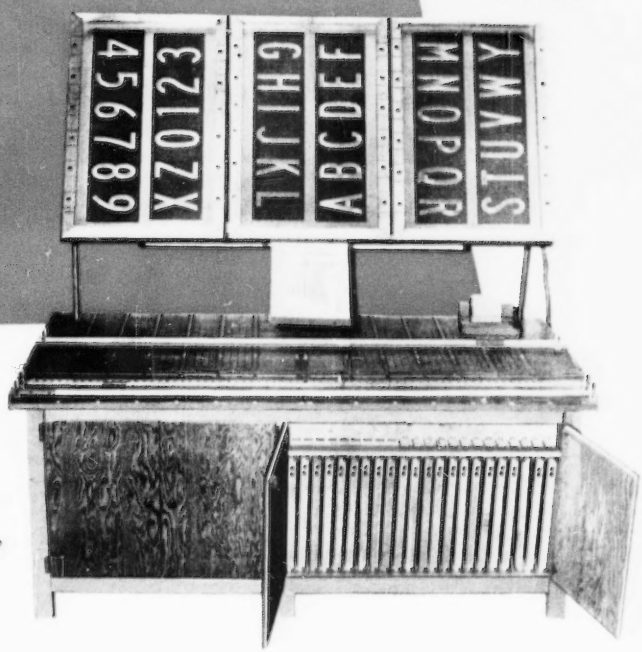
FOR ECONOMY

FOR SHORT RUNS

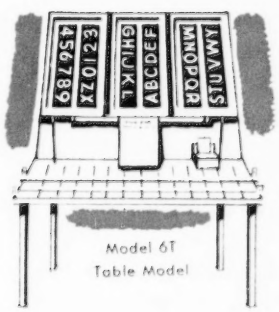
FOR INCREASED PRODUCTION

All Signs point to MONO-PRINTER

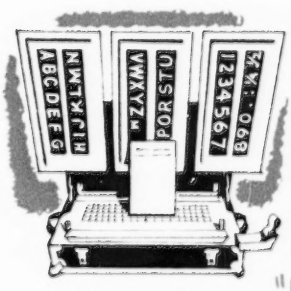
Model 6C
Cabinet Type



New Mechanical Silk-Screen Unit That Turns Out Signs in *MINUTES!*



Model 6T
Table Model



Portable Trunk Model

Now! Enjoy the advantages of an efficient, economical silk-screen department, complete in one easy-to-operate machine! The MONO-PRINTER, by PRISMO, enables you to print or imprint signs and messages . . . . without costly preparation of individual screens . . . without time-consuming engineering procedures and layouts! Everything is *pre-designed*. Everything is made *to easy . . . anyone* can turn out a sign in minutes!

IDEAL FOR SHORT RUNS of destination, repair and construction signs . . . standard signs and route marker imprints. Simple layout and imprinting operation saves time and money! A layout made on the machine's Layout Card can be used over and over again!

SPEEDS UP PRODUCTION on long runs of standard signs, too!

MORE EFFICIENT SILK-SCREEN PROCESS! The MONO-PRINTER produces cleaner, more uniform *beaver-bodied letters*. Prints or imprints on almost any type of surface, reflective or plain enamels, up to 2 inches thick.

Prismo will "custom-build" a MONO-PRINTER to meet your specific needs. Silk screens of the complete alphabet and numerals are available in any size and series of letters. Alphabets conform to standard fonts of the AASHO and the Manual of Uniform Traffic control devices.

WRITE FOR ILLUSTRATED BULLETIN NO. 5210 AND DETAILED INFORMATION . . . TODAY!

PRISMO

SAFETY CORPORATION

HUNTINGDON, PENNSYLVANIA

"First With the Best in Highway Marking Materials"

SECRETARY'S COLUMN

(Continued from page 35)

presented at Chicago last year were printed in the several issues of the magazine, the pages of which were then reduced to offset press plates from which a 6"x9" page size volume was printed. While the reduction to such fine print is very disappointing and will be avoided in the future, the financial savings was most substantial and welcome. Compared with a $1,540 cost for printing and distributing the 1951 Proceedings, the total 1952 cost was over $600. Although the size of the type had to be reduced by one-third, this affected a reduction in cost of almost two-thirds.

With the permission of the Board I plan to follow the same procedure this year except that the papers will be printed in the magazine in a three column format the type for which will be saved and subsequently made into a two column format for printing the 6"x9" size page Proceedings without any reduction in type face size.

Traffic Engineering Magazine

The magazine has continued to require the major attention of Headquarters office for the reason that it returns the largest financial support, and the key source here is advertising revenue. Although our paid circulation, including the Institute's membership, now totals 2197, an increase of 55 subscribers during the year, the income from subscriptions is only sufficient to pay a little more than one-half of the printing and distribution costs. So the advertising income must bear the rather heavy burden of not only one-half of the production costs, but at the same time finance the costs of much of the nonproductive service that Headquarters must of necessity provide—public relations, Yearbooks, Proceedings, employment placement, etc. So it is important for every member to recognize the contributions the magazine advertisers are making to the Institute's well being, and wherever the market place is entered to remember the products these good friends sell.

Local Sections—Student Chapters

Two of the four authorized student chapters and nine of the ten local sections were quite active during the year. The University of Michigan and the Cornell chapters were not active, and again the limited membership—there are only a half dozen members scattered throughout the state—prevented the Florida Section from functioning. There is a very concerted effort underway to organize the membership of all the states (except Oklahoma) comprising District 5 into a Southern Section to be patterned after the successful Western Section. The Florida members have agreed to permit the new Section, if organized, to absorb the inactive Florida Section. A meeting to consider organizing the new Section has been scheduled immediately following the close of this meeting.

Membership

The efforts of both your Committee on New Members and the Membership Committee have been very productive this year. At the beginning of the year there were 28 applications pending. Headquarters office has processed and put into the hands of the Membership Committee a total of 134 applications during the year. The hard working Committee completed work and made recommendations on 120 of these. This involved a tremendous amount of correspondence, for the Committee must mail a minimum of 10 letters for each application. Thus, the Committee had an average of five letters in the mail every business day last year or in other words on the average each Committee member dispatched one letter every business day throughout the year. In addition the Committee took out enough time to redesign and simplify the application form, the adoption of which by the Board has permitted Headquarters to work out a plan by which the Committee's work load in routine details will be greatly reduced.

During the year, including those acted on yesterday the Board approved 24 transfer in grade applications and elected a total of 90 new members. There were two deaths, five resignations, and because of delinquency, five members were dropped. Thus, there was a net increase of 78 which added to the 677 members reported last year raises our total membership to a new high of 755.

(The Board met again October 1, 1953 and approved 3 more transfers while electing 13 additional new members. One additional death was reported so that the net increase during the year becomes 90 and the membership now totals 767, assuming that all applicants accept their election.)

Conclusion

In conclusion, I want to make it plain that the continuing progress of the Institute during the year would not have been possible except for the wise and understanding guidance of President Crandall and the Board of Direction; the continuing cooperation and loyalty of the other members of our Headquarters staff; the work of the various technical and administrative committees, more especially the ever busy Membership Committee; the work of the magazine's Technical and Associate Editors with special thanks to Martin Stark for his preparation of the volume index.

I want to extend my personal appreciation to all who contributed articles and photographs for use in the magazine, and to all the membership for the unfailing cooperation and kindness that have been mine this past year.

M. M. TODD,
Executive Secretary

PERSONALITY

(Continued from page 30)

Baltimore arterial routes; and as a special traffic consultant to the New York City Tunnel Authority.

He has served as a special lecturer at the following institutions: Harvard and Yale Universities—Bureau of Highway Traffic; Columbia University—School of Business, and University Extension; and Rutgers University.

Nat's many professional contributions and activities are earmarked by his membership in the American Society of Civil Engineers, American Statistical Association, and having served as President of the Society of Terminal Engineers and, of course, the Institute of Traffic Engineers. In the ITE, he has also served as Director and Vice-President. He has contributed and helped actuate many functions of the Institute's "Spade Work" Committees. i.e. He was Editor of the 1935 Proceedings, and the originator of the TRAFFIC ENGINEER'S TECHNICAL NOTEBOOK. Nat was also a primary force in the adoption of the Constitutional amendment permitting Sustaining Organizations in the ITE.

Congratulations for your enviable record, Nat, the Institute is proud to claim you as one of our own.

ITE-GRAM

(Continued from page 22)

7. Ratio: sine 13.5 degrees over 18 equals sine 32.4 degrees over X.
8. 2.81 to the 3.81 power.
9. .695 to the 2.4 power.
10. e to the 1.2 power.
11. 2.2 to the minus 3.5 power.
12. 42.2 to the power: 3.14 over 7.08.
13. Convert 87 mph to fps.
14. Convert 220 gpm to cfs.

Please do not dispute Editor's judgment, because he is not too sure of these answers.

New Appointment

Hammond Receives Promotion

Daniel S. Hammond has been appointed Traffic Engineer with the consulting firm of Charles A. Maguire and Associates, Providence, R. I.

In his new position as Traffic Engineer, Mr. Hammond will be responsible for the traffic aspects of highway location and layout, parking facilities, and street operations. These phases involve the accumulation, compilation and analysis of all pertinent data needed for the scientific solution of a particular problem.

Mr. Hammond, a native of Paterson, New Jersey, received the degree of Bachelor of Science in Civil Engineering from Tri State College, in 1946, and holds the degree of Master of Civil Engineering from the Polytechnic Institute of Brooklyn. Prior to his attendance at the Yale University Bureau of Highway Traffic on a scholarship in 1952, he accumulated five years of experience in diversified highway work. Starting as a chief of party on the three-level cantilever section of the Brooklyn-Queens Connecting Highway in New York City, he advanced to Assistant Resident Engineer on a section of the Cross Bronx Expressway for the New York consulting firm of Andrews, Clark & Buckley. It was in the design office, where the highway emerges from its embryonic state of ideas and lines to a workable set of construction plans, that Mr. Hammond realized that the traffic aspects of highway planning were the part of Highway Engineering to which he desired to devote more of his time. The year's study at Yale has done much to assemble the basics with which to further this desire.

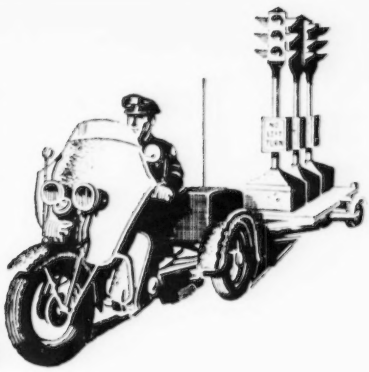
While in the employ of the Maguire firm, Mr. Hammond worked on the analysis of Origin and Destination surveys, geometric layout of expressway interchanges and on numerous problems concerning highway planning as to location and traffic considerations.

Mr. Hammond is a member of the American Society of Military Engineers and a registered professional engineer in the State of Rhode Island.

Make these

"TRAFFIC SENTRY"

PORTABLE TRAFFIC SIGNALS



Standard Equipment in Your City

Use them in case of fire, flood or public assemblages.
Use them when spot congestion develops.
Use them during daily rush hours.
Use them where there are detours.

They're easy on the traffic officer.
Easily handled by one man.
Easily wheeled off the street when not in use.
Easily transported to distant emergency spots on a motorcycle trailer.

SPECIFICATIONS

Height—9' 2" overall.
Two 8" wheels with rubber cushion tires.
Completely automatic; also manual control.
Self-contained battery charger, 110-volt.
Heavy-duty 6-volt battery, which will operate signal 24 hours continuously.

WRITE FOR COMPLETE DATA

PORTABLE TRAFFIC SIGNALS, INC.

Manufacturers of the "Traffic Sentry"

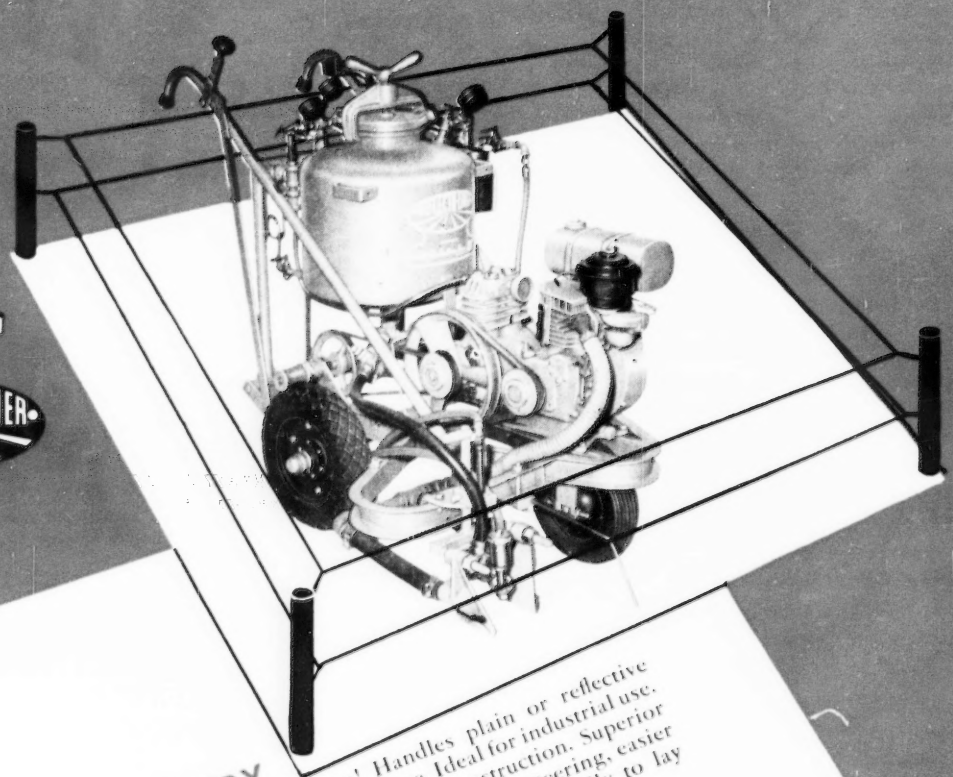
1620 SOUTH HILL STREET
LOS ANGELES 15, CALIF.

Kentucky Holds Second Annual Traffic Engineering School

The Second Annual Traffic Engineering School, sponsored jointly by the Kentucky Department of Highways and the College of Engineering of the University of Kentucky through the University Extension Division will take place on the campus of the University of Kentucky from November 16th to the 20th.

Please mention TRAFFIC ENGINEERING when writing to Advertisers.

Lightweight Champion *with a 1-2 Punch!*



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1

For INDUSTRY

A left jab to duplication! Handles plain or reflective marking material with equal ease. Ideal for industrial use. Strong channel and tubular steel construction. Superior engineering gives greater balance, better steering, easier cleaning. The first machine designed especially to lay reflective materials.

2

For MUNICIPALITIES

A right uppercut to marking costs! One machine for any type of marking. The model 8T will lay any marking material with a speed and quality that means greater savings for *you!* Sharp line definition to within one inch of the curb—clean-cut, uniform line, 2 to 6 inches in width.

Don't miss an opportunity to put your money on a real champ! Write or phone today for full details.

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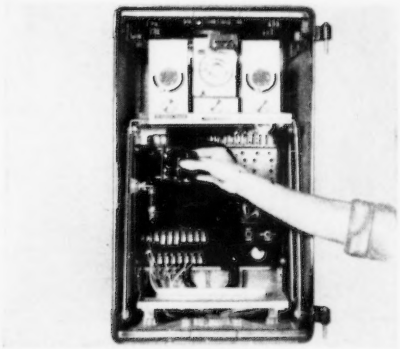
Index to Advertisers

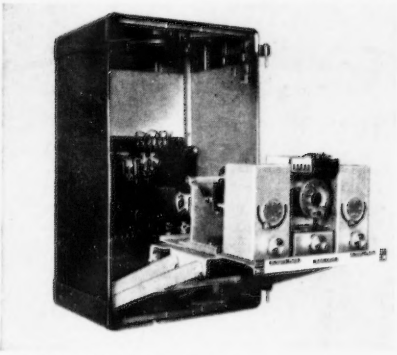
The revenue derived from the sale of advertising space assists the **Institute** in publishing TRAFFIC ENGINEERING on a regular monthly basis. The manufacturers listed below will be glad to cooperate with products and services which will be helpful to you in developing your traffic engineering and public improvement program.

A'G'A Division of Elastic Stop Nut Corp.	21	Mi-Co Meters	36
Automatic Signal Division	28	Minnesota Mining & Manufacturing Co.	1
Dual Parking Meter Company	4	Miro-Flex Company, Inc.	34
Duncan Parking Meter Corp.	2	Portable Traffic Signals, Inc.	39
Eagle Signal Corporation	Inside Front Cover	Prismo Safety Corporation	37
General Electric Company	Back Cover	Radiator Specialty Company	25
Grote Manufacturing Company, Inc.	21	Remington Rand	6
Karpark Corporation	27	Tuthill Spring Company	33
Lyle Signs, Inc.	17	Wald Industries, Inc.	40
Lofland Company	26	Weaver Machine Company	29

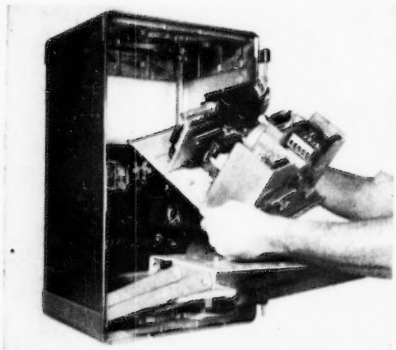
EASY TO SEE components like dial unit, timing knobs, as in Type F, make servicing easy.



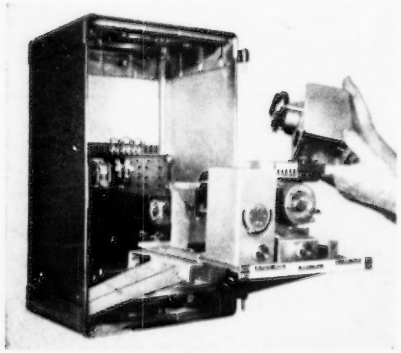
JACK-MOUNTED RELAYS make field servicing take less time — saves man-hours and labor costs.



TIMER SWINGS OUT on pantograph arms, for easy inspection and maintenance in the field.



TIMER IS EASILY REMOVED for fast servicing by just twisting two half-turn fasteners, unplugging Jones plug, and lifting.



SIMPLE FIELD OPERATION is assured with jack-mounting and unitized construction. Here extension limit relay has been unplugged.

G-E TYPE W CONTROLLER OFFERS

semi-vehicle actuation with the simplicity of the famous Type F

SIMPLICITY of jack-mounting and unitized construction pioneered in the famous G-E Type F traffic controller, has been incorporated into G.E.'s new semi-vehicle-actuated controller — the Type W. This electro-mechanical controller uses basic parts, such as the timing dial units and signal drum assembly, which are mechanically identical to those of the famous Type F Controller.

IDEAL FOR INTERSECTIONS where signalization is required to enable motorists to cross or gain access to the main thoroughfare, the Type W is also available in fully-actuated models.

MORE INFORMATION is available at your nearest G-E Apparatus Sales Office or Traffic Control Distributor. Or write for Bulletin GEC-941, to Section 453-60, General Electric Company, Schenectady 5, N. Y.

453-60

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